

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
SHERMAN DIVISION**

**WAPP TECH LIMITED
PARTNERSHIP and
WAPP TECH CORP.,**

Plaintiffs,

V.

**APPLE INC.,
CAPITAL ONE, N.A.,
CAPITAL ONE SERVICES, LLC,
FROST BANK, and
CULLEN/FROST BANKERS, INC.**

Defendants.

Civil Action No. 4:25-cv-00230

JURY TRIAL DEMANDED

PLAINTIFFS' FIRST AMENDED COMPLAINT

Plaintiffs WAPP TECH LIMITED PARTNERSHIP and WAPP TECH CORP. (“WAPP” or “Plaintiffs”) hereby submit this First Amended Complaint for patent infringement against Defendants Apple Inc. (“Apple”); Capital One, N.A. and Capital One Services, LLC (collectively “Capital One”); and Frost Bank and Cullen/Frost Bankers, Inc. (collectively, “Frost”).

THE PARTIES

1. Plaintiff WAPP TECH LIMITED PARTNERSHIP is a Delaware limited partnership organized and existing under the laws of the State of Delaware, and its registered agent for service of process in Delaware is Corporations & Companies, Inc. (CorpCo), 910 Foulk Road, Suite 201 Wilmington, Delaware 19803.
2. Plaintiff WAPP TECH CORP. is a body corporate organized and existing under the laws of the Province of Alberta, Canada, and its registered agent for service of process in Delaware is

Corporations & Companies, Inc. (CorpCo), 910 Foulk Road, Suite 201 Wilmington, Delaware 19803.

3. On information and belief, Defendant Apple Inc. (“Apple”) is a company organized and existing under the laws of the State of California with one of its principal places of business at 6900 W Parmer Ln, Austin, TX 78729.
4. On information and belief, Defendant Capital One, N.A. is a federally chartered national banking association organized and existing under the laws of the United States having a principal place of business at 1680 Capital One Drive, McLean, Virginia 22102.¹
5. On information and belief, Defendant Capital One Services, LLC is a limited liability company organized and existing under the laws of the state of Delaware, with a principal place of business at 1680 Capital One Drive, McLean Virginia 22102.
6. On information and belief, Frost Bank is a Texas State Financial Institution organized and existing under the laws of the State of Texas, with a principal place of business located at 111 West Houston Street, San Antonio, Texas 78205. On information and belief, Frost Bank is a subsidiary of Cullen/Frost Bankers, Inc.
7. On information and belief, Cullen/Frost Bankers, Inc. is a corporation organized and existing under the laws of the state of Delaware, with a principal place of business at 111 West Houston Street, San Antonio, Texas 78205.

JURISDICTION AND VENUE

8. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a) because this action arises under the patent laws of the United States, 35 U.S.C. §§ 101 *et seq.* Venue is proper in this federal district pursuant to 28 U.S.C. §1400(b).
9. The Court has personal jurisdiction over Defendants, in part, because Defendants have

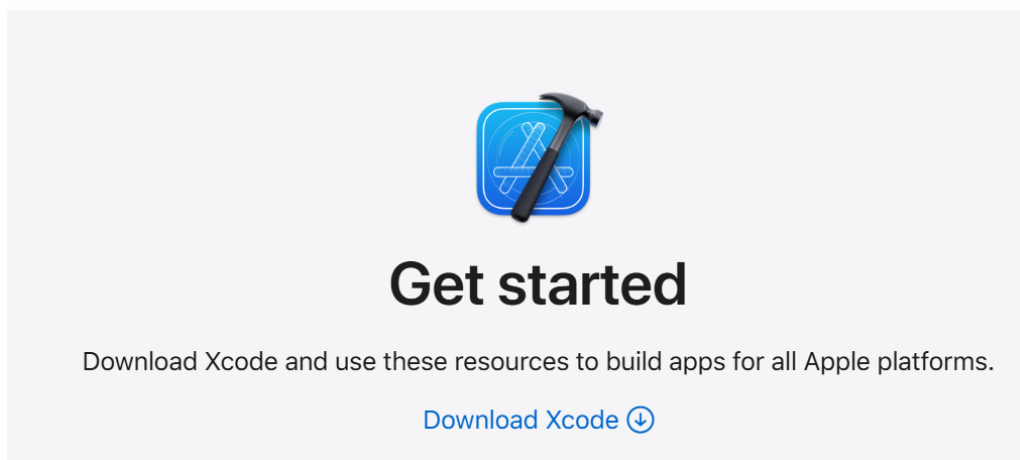
¹ <https://banks.data.fdic.gov/bankfind-suite/bankfind/details/4297> (accessed Feb. 28, 2025).

minimum contacts within the State of Texas; Defendants have purposefully availed themselves of the privileges of conducting business in the State of Texas; Defendants regularly conduct business within the State of Texas; and Plaintiffs' causes of action arise directly from Defendants' business contacts and other activities in the State of Texas, including on information and belief, by virtue of Defendants' infringement in the State of Texas. Further, this Court has general jurisdiction over the Defendants, in part, due to their continuous and systematic contacts with the State of Texas. Further, on information and belief, the Defendants are subject to the Court's jurisdiction, in part, because the Defendants have committed patent infringement in the State of Texas. The Defendants have regular and established places of business in this district. The Defendants are subject to this Court's specific and general personal jurisdiction pursuant to due process and/or the Texas Long Arm Statute, due at least to their substantial and pervasive business in this State and judicial district, including: (i) at least part of their infringing activities alleged herein; and (ii) regularly doing or soliciting business, engaging in other persistent conduct, and/or deriving substantial revenue from goods sold and services provided to Texas residents.

10. On information and belief, Defendants have regular and established places of business throughout the State of Texas, including within the Eastern District of Texas, and commit acts of infringement within this District.
11. Venue as to Apple is proper in this judicial district under 28 U.S.C. § 1400(b) at least because Apple has committed acts of infringement in this judicial district and has regular and established places of business in this judicial district. Apple makes, uses, sells, offers to sell, and/or imports products and/or services accused of infringement in this case into and/or within this judicial district, and Apple indirectly infringes in this judicial district by inducing

infringement by others in this district. Apple maintains a permanent and/or continuing presence within this judicial district at its regular and established places of business. Apple's commission of acts of infringement, and the presence of Apple locations in the Eastern District of Texas, establish venue over it under 28 U.S.C. § 1400(b).

12. As an example, Apple has committed acts of infringement by selling and/or offering for sale accused products in this district, including Apple's Xcode software. Apple offers for sale and sells Xcode to its customers in this district, including Apple's co-Defendants in this lawsuit. For example, Apple sells and offers to sell Xcode in this district through its website, where it offers Xcode for download.²



Apple provides a software license whereby users may download and use Xcode only if they agree to the terms of Apple's "Xcode and Apple SDKs Agreement," which states: "IF YOU DO NOT OR CANNOT AGREE TO THE TERMS OF THIS AGREEMENT, YOU CANNOT USE THIS APPLE SOFTWARE OR THE APPLE SERVICES."³ Apple customers in this judicial district have downloaded Xcode and agreed to the terms of this contract, thereby entering into a computer software license with Apple. This transaction

² <https://developer.apple.com/xcode/>.

³ <https://www.apple.com/legal/sla/docs/xcode.pdf>.

constitutes an infringing sale. *See Minton v. NASD, Inc.*, 336 F.3d 1373, 1378 (Fed. Cir. 2003) (“a commercial transaction arranged as a ‘license’ or a ‘lease’ of a product or a device ... may be tantamount to a sale (e.g., a standard computer software license)”). Apple’s website constitutes an offer to engage in this infringing transaction in this judicial district, and therefore constitutes an infringing offer for sale in this district.

13. As another example, Apple also sells and offers to sell Xcode in this judicial district for \$99 per year as part of the Apple Developer Program.⁴ “Membership includes access to beta OS releases, advanced app capabilities, and tools needed to develop, test, and distribute apps and Safari Extensions.” By purchasing a subscription, Apple customers obtain an enhanced version of Xcode with “[f]ull access to a comprehensive set of development tools” and “[a]dvanced app capabilities and services.” Members also receive access to “the latest beta versions of operating systems and SDKs.”⁵ Becoming a member of the Apple Developer Program and paying the \$99 fee removes “limitations” that Apple places on features (including accused features) of Xcode. Apple customers in this judicial district have signed up for the Apple Developer Program, paid the \$99 fee, and downloaded an enhanced version of Xcode. This transaction constitutes an infringing sale. Apple’s website constitutes an offer to engage in this infringing transaction in this judicial district, and therefore constitutes an infringing offer for sale in this district.

14. As alleged in this Complaint, Apple also indirectly infringes by inducing its customers’ infringement in this district. For example, Apple induces the infringing uses of Xcode by Apple’s co-Defendants in this lawsuit that take place in this district. Apple’s acts of indirect infringement constitute acts of infringement in this judicial district. *Seven Networks, LLC v.*

⁴ <https://developer.apple.com/support/compare-memberships/>.

⁵ <https://developer.apple.com/programs/whats-included/>.

Google LLC, 315 F. Supp. 3d 933, 943 (E.D. Tex. 2018) (“the acts of infringement required to support venue in a patent infringement action need not be acts of direct infringement, and venue does lie if the defendant only induced the infringement or contributed to the infringement in the forum”).

15. As yet another example, Apple has committed acts of infringement in this judicial district by using, selling, offering for sale, and/or importing mobile devices (such as iPhones) that come with mobile applications installed that infringe one or more claims of the asserted patents. For example, each iPhone comes with the Photos app pre-installed. An iPhone with the Photos app installed infringes at least ’192 Patent Claim 60 because it constitutes a “system comprising an application configured to enable a user to modify a photo on a mobile device”⁶ and because the Photos app was developed using “a software authoring platform configured to simultaneously visually emulate, via one or more profile display windows, a plurality of hardware characteristics indicative of performance of the mobile device when executing the application.” Apple’s acts of infringement in this judicial district include without limitation Apple’s selling and/or offering for sale of iPhones with the Photos app installed via Apple’s website⁷ and/or via Best Buy and/or Target stores (or other stores) in this judicial district, as described in greater detail below.

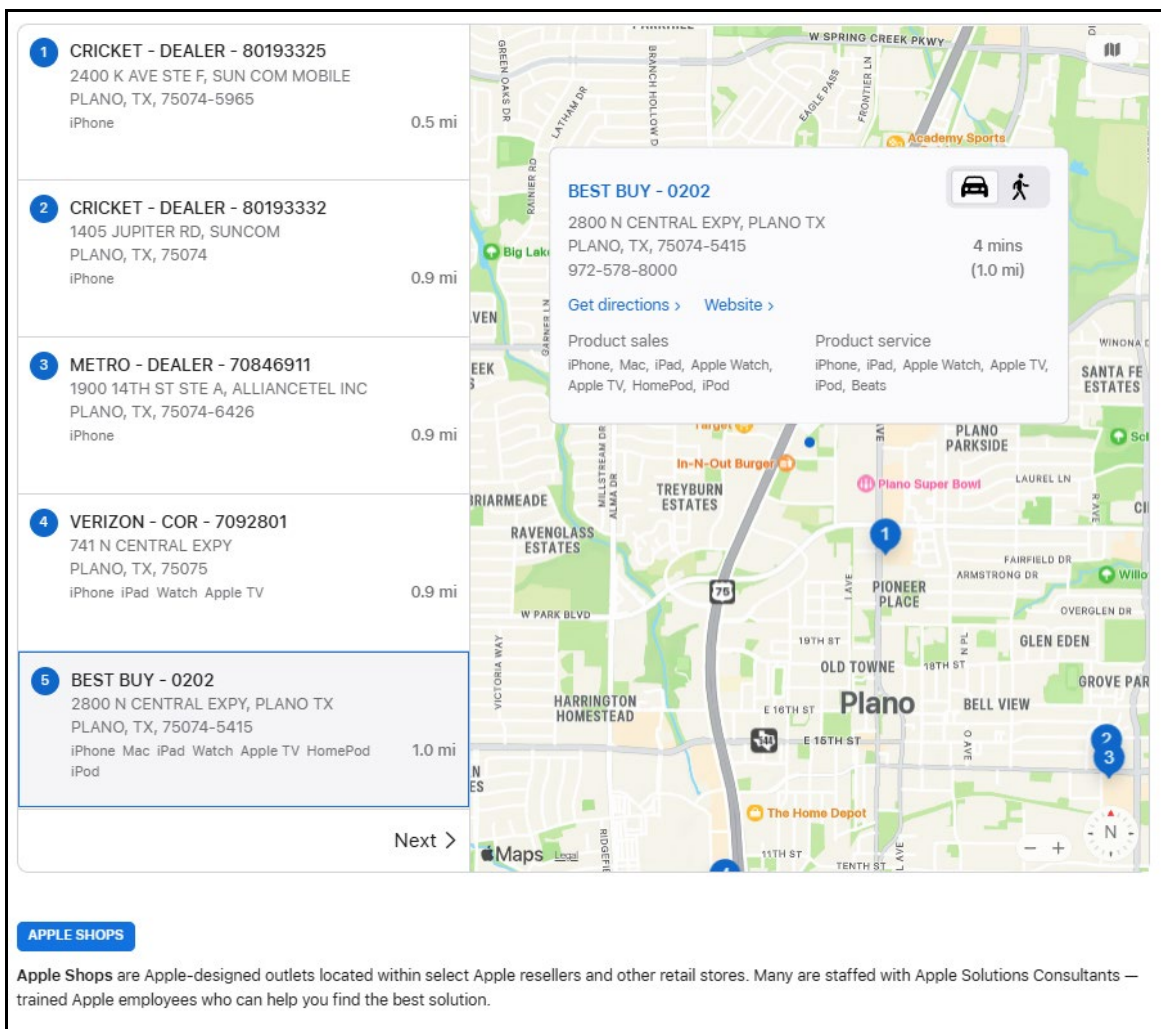
16. Apple has multiple regular and established places of business within this judicial district. These Apple places of business are physical locations owned, leased, possessed, and/or controlled by Apple, where Apple employees and/or agents regularly conduct Apple’s business.

⁶ See, e.g., <https://support.apple.com/guide/iphone/edit-photos-and-videos-iphb08064d57/18.0/ios/18.0> (“After you take a photo or video, use the tools in the Photos app to edit it on your iPhone.”)

⁷ <https://www.apple.com/shop/buy-iphone>

17. Apple’s regular and established places of business within this judicial district include Apple Shops at Best Buy stores within this district. According to Apple’s website, “Apple Shops are Apple-designed outlets located within select Apple resellers and other retail stores. Many are staffed with Apple Solutions Consultants — trained Apple employees who can help you find the best solution.”⁸

18. For example, Apple advertises on its website that the Best Buy located at 2800 North Central Expressway, Plano, Texas 75074-5415 (Collin County), contains an Apple Shop:



⁸ <https://locate.apple.com/sales?pt=3&lat=33.021827697753906&lon=-96.69925689697266&address=Plano%2C+TX>

Best Buy’s website confirms that this location includes an Apple Shop.⁹ Best Buy’s website also states “**We are an Apple Authorized Service Provider.** Our Agents are Apple-trained, so you can trust us with all your Apple devices, no matter where you bought them. ... We only use genuine Apple parts to deliver Apple-certified repairs, and only Apple-certified repairs are backed by Apple.”¹⁰

19. Apple has at least ten employees who staff at least nine Best Buy Apple Shops located in the Eastern District of Texas. On July 15, 2024, Apple publicly filed the declaration of Apple employee Stephanie Calhoun Jemmings that identified the following Best Buy Apple Shops in the Eastern District of Texas and their staffing with Apple employees, as shown in the table below:

Store Name	Store Street Address	Apple Employees
Best Buy - 0180	3333 Preston Rd 200, Frisco	1 ASC
Best Buy - 0202	2800 N Central Expy, Plano	1 Lead ASC
Best Buy - 0238	5885 Eastex Fwy, Beaumont	1 Lead ASC
Best Buy - 0246	5514 S Broadway, Tyler	1 ASC
Best Buy - 0258	2601 S Stemmons Fwy, Ste 300, Lewisville	1 Lead ASC + 1 Specialist
Best Buy - 0594	422 W Loop 281, Ste 100, Longview	1 Specialist
Best Buy - 0827	1800 S Loop 228, Ste 102, Bldg 1, Denton	1 Lead ASC + 1 Specialist
Best Buy - 1773	5299 Eldorado Pkwy, Frisco	1 Lead ASC + 1 Specialist
Best Buy - 1780	190 E Stacy Rd, Bldg 3000, Allen	1 Lead ASC

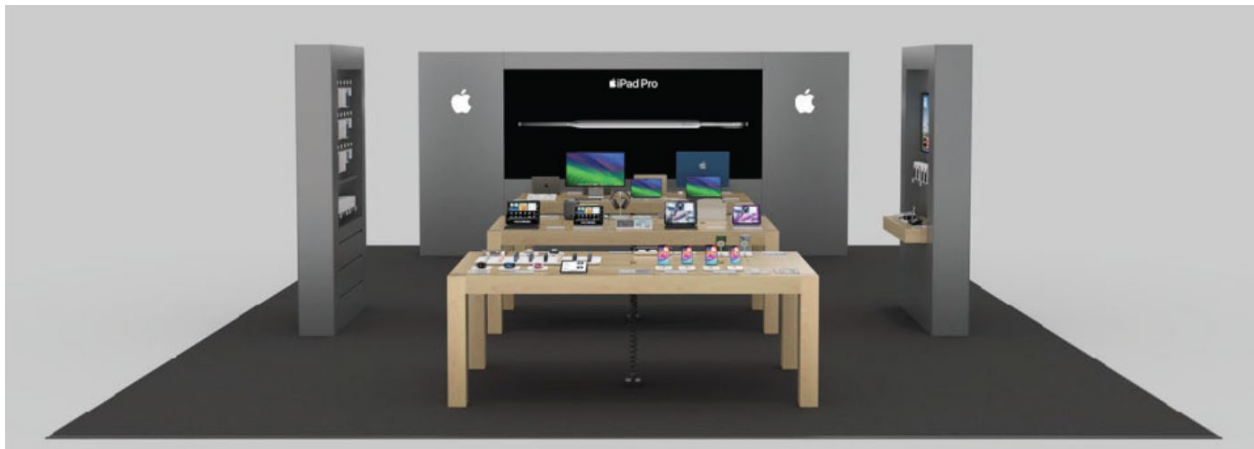
Slyde Analytics LLC v. Apple Inc., No. 2:24-cv-00331-RWS-RSP, Dkt. 21-7 at ¶5 (E.D. Tex. 2024). Ms. Jemmings stated that a “Lead” ASC is responsible for covering multiple locations. For example, one Lead ASC covers the Best Buy locations in Lewisville, Denton, and Frisco (Eldorado Parkway), and another Lead ASC covers the Best Buy locations in Plano and Allen. According to Ms. Jemmings, Apple has four Lead ASCs, two ASCs, and four Specialists who

⁹ <https://stores.bestbuy.com/tx/plano/2800-n-central-expy-202.html>

¹⁰ <https://www.bestbuy.com/site/services/apple-service-repair/pcmcat1554741516170.c>

work within Best Buy locations in the Eastern District of Texas. *Id.* Ms. Jemmings also stated that these Apple employees engage with Best Buy’s employees and customers to educate them about Apple’s products, advocate for Apple’s brand, and help customers choose an Apple product that best suits their needs. *Id.* at ¶4.

20. The Apple Shops in this district are owned, leased, possessed, and/or controlled by Apple, and Apple employees and/or agents regularly conduct Apple’s business at the Apple Shops. Apple shops are “Apple-designed” outlets that are dedicated to selling Apple products using Apple branded furniture, fixtures, and display cases prominently featuring Apple logos. Apple designs and provides to Best Buy the Apple-branded fixtures, such as tables and display cases, that are used to display Apple’s products in Apple Shops, including the fixtures shown in the figure below:



Slyde, Dkt. 21-8 at ¶¶4-6. Apple pays the cost of installing and maintaining the fixtures within each Apple Shop. *Id.* at ¶8. Apple controls where the Apple Shop may be located within each Best Buy store and reviews and approves the location of each Apple Shop. *Id.* at ¶9. Best Buy describes each Apple Shop as a “store-within-a-store for all things Apple.”¹¹ On information and belief, Apple has contractual agreements with Best Buy that give Apple

¹¹ See, e.g., <https://stores.bestbuy.com/tx/plano/2800-n-central-expy-202.html>

additional rights to possess and control each Apple Shop in this district in addition to those examples listed above.

21. As discussed above, the Apple Shops in this district are staffed by at least ten Apple employees who regularly conduct Apple's business at those Apple Shops, including marketing, selling, and supporting Apple products. On information and belief, additional Apple employees and/or agents (such as Best Buy employees acting as agents of Apple pursuant to the contracts between Best Buy and Apple) regularly conduct Apple's business at each Apple Shop in this district.

22. Wapp further alleges:

- a. "Apple Shops provide a dedicated space with Apple's logo and branding on shelving and display cases." Dkt. 47 at 5.
- b. "Apple employees, known as 'Community Specialists,' visit third-party retailers [in the Eastern District of Texas] including Best Buy locations." *Id.* at 6.
- c. At least "seven Community Specialists visit Best Buy's stores in the Eastern District of Texas," with at least one Community Specialist assigned to each store. *Id.* at 6.
- d. "Apple has restrictions on the use of Apple co-designed or branded fixtures to ensure that retailers use them consistently." *Id.* at 14.
- e. "Apple provides routine maintenance for the fixtures at Best Buy." *Id.* at 14.

23. To the extent Apple moves to dismiss this Amended Complaint for improper venue, Wapp intends to take venue discovery. Wapp hereby incorporates by reference all venue discovery.

24. Apple also maintains additional regular and established places of business in this judicial district, for example, at "Apple at Target shop-in-shops" within this district.¹² One such place

¹² <https://corporate.target.com/press/release/2022/10/target-and-apple-deepen-collaboration-with->

of business is the “Apple Experience” shop-within-a-shop located within a Target store at 3201 Preston Rd Frisco, TX 75034-9446.¹³ Plaintiff is informed and believes that Apple Experience shops within Target stores in this judicial district are owned, leased, possessed, and/or controlled by Apple, and Apple employees and/or agents regularly conduct Apple’s business at these locations.

25. Venue as to Capital One is proper in this judicial district under 28 U.S.C. § 1400(b) at least because Capital One has committed acts of infringement in this judicial district and has regular and established places of business in this judicial district.

26. For example, Defendant Capital One Services, LLC owns, leases, controls, and/or possesses a place of business at 8000 Dominion Pkwy, Plano, Texas, United States, and advertises job openings for employees with mobile application development experience including Xcode and Android experience.¹⁴ In addition, Defendant Capital One Services, LLC distributes its mobile applications through Apple’s App Store and Google’s Google Play Store.

27. For example, Defendant Capital One, N.A., also owns, leases, controls, and/or possesses a place of business at 8000 Dominion Pkwy, Plano, Texas, United States and has multiple other locations throughout the State of Texas, and within the Eastern District of Texas, including

more-

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¹³ <https://www.target.com/sl/frisco/1763>

¹⁴ *See, e.g.*, <https://www.capitalonecareers.com/job/mclean/director-software-engineering-corporate-tech-esm/1732/70047388544> (accessed Feb. 28, 2025); <https://www.capitalonecareers.com/job/plano/director-technical-program-management/1732/77422830016> (accessed Feb. 28, 2025); <https://www.capitalonecareers.com/job/plano/manager-front-end-designer-design-systems/1732/76660899376> (accessed Feb. 28, 2025); *see also* <https://www.linkedin.com/in/christian-glazewski-841a7a200/> (accessed Feb. 28, 2025); <https://www.linkedin.com/in/michael-d-mckenna/> (accessed Feb. 28, 2025); <https://www.linkedin.com/in/markheussner/> (accessed Feb. 28, 2025); <https://www.linkedin.com/in/ogomeznovau/> (accessed Feb. 28, 2025).

banking facilities located at:

- 1221 E. Spring Creek Pkwy, Plano, TX, 75074
- 101 Stacy Rd, Fairview, TX 75069
- 8989 Preston Rd, Frisco, TX 75034

28. As described in greater detail below, Defendant Capital One Services, LLC has committed acts of infringement in this judicial district by using Apple's Xcode and/or Google's Android Studio (and/or other software development tools) to author mobile applications. Capital One Services, LLC employees and/or agents within this judicial district have committed acts of infringement by using one or more claims and/or claim elements of the Patents-in-Suit.

29. As described in greater detail below, Defendant Capital One Services, LLC has induced one or more third parties in this judicial district to author mobile applications on its behalf using Apple's Xcode and/or Google's Android Studio (and/or other software development tools) in an infringing manner.

30. As described in greater detail below, Defendant Capital One Services, LLC has directly infringed at least '192 Patent Claim 60 by using, selling, offering for sale, and/or importing mobile applications in this judicial district, *e.g.*, by selling and offering for sale the "Capital One Mobile" application through Apple's App Store and Google's Google Play Store in this district. The "Capital One Mobile" application is a "system comprising an application configured to enable a user to modify a photo on a mobile device"¹⁵ and it was developed using "a software authoring platform configured to simultaneously visually emulate, via one

¹⁵ See, *e.g.*, <https://www.capitalone.com/learn-grow/money-management/what-is-mobile-check-deposit/> ("Mobile check deposit works by using a service called remote deposit capture. Think of it like scanning a document onto your computer. Essentially, remote deposit capture lets you take a digital image of your check. Your financial institution will then collect the images and process your deposit.")

or more profile display windows, a plurality of hardware characteristics indicative of performance of the mobile device when executing the application.”

31. As described in greater detail below, Defendant Capital One, N.A. has committed acts of infringement in this judicial district by using Apple’s Xcode and/or Google’s Android Studio (and/or other software development tools) to author mobile applications. Defendant Capital One, N.A. employees and/or agents within this judicial district have committed acts of infringement by using one or more claims and/or claim elements of the Patents-in-Suit.

32. As described in greater detail below, Defendant Capital One, N.A. has induced one or more third parties in this judicial district to author mobile applications on its behalf using Apple’s Xcode and/or Google’s Android Studio (and/or other software development tools) in an infringing manner.

33. As described in greater detail below, Defendant Capital One, N.A. has directly infringed at least ’192 Patent Claim 60 by using, selling, offering for sale, and/or importing mobile applications in this judicial district, *e.g.*, by selling and offering for sale the “Capital One Mobile” application through Apple’s App Store and Google’s Google Play Store in this district. The “Capital One Mobile” application is a “system comprising an application configured to enable a user to modify a photo on a mobile device”¹⁶ and it was developed using “a software authoring platform configured to simultaneously visually emulate, via one or more profile display windows, a plurality of hardware characteristics indicative of performance of the mobile device when executing the application.”

¹⁶ See, *e.g.*, <https://www.capitalone.com/learn-grow/money-management/what-is-mobile-check-deposit/> (“Mobile check deposit works by using a service called remote deposit capture. Think of it like scanning a document onto your computer. Essentially, remote deposit capture lets you take a digital image of your check. Your financial institution will then collect the images and process your deposit.”)

34. Venue as to Frost is proper in this judicial district under 28 U.S.C. § 1400(b) at least because Frost has committed acts of infringement in this judicial district and has regular and established places of business in this judicial district.

35. Defendant Frost Bank owns, leases, controls, and/or possesses multiple locations throughout the State of Texas, and within the Eastern District of Texas, including Financial Centers located at:

- 600 E 15th St, Plano, TX 75074
- 1212 McDermott Suite 400 Allen, Texas 75013
- 5851 Long Prairie Rd. Flower Mound, Texas 75028
- 3100 Independence Pkwy., Ste. 100 Plano, TX 75075
- 5021 W. Park Blvd. Plano, TX 75093

36. Defendant Cullen/Frost Bankers, Inc. owns, leases, controls, and/or possesses multiple locations throughout the State of Texas, including Financial Centers located in this district and referenced in the paragraph above.

37. As described in greater detail below, Defendant Frost Bank has committed acts of infringement in this judicial district by using Apple's Xcode and/or Google's Android Studio (and/or other software development tools) to author mobile applications. Frost Bank employees and/or agents within this judicial district have committed acts of infringement by using one or more claims and/or claim elements of the Patents-in-Suit.

38. As described in greater detail below, Defendant Frost Bank has induced one or more third parties in this judicial district to author mobile applications on its behalf using Apple's Xcode and/or Google's Android Studio (and/or other software development tools) in an infringing manner.

39. As described in greater detail below, Defendant Frost Bank has directly infringed at least '192 Patent Claim 60 by using, selling, offering for sale, and/or importing mobile applications in this judicial district, *e.g.*, by selling and offering for sale the “Frost” application through Apple’s App Store and Google’s Google Play Store in this district. The “Frost” application is a “system comprising an application configured to enable a user to modify a photo on a mobile device”¹⁷ and it was developed using “a software authoring platform configured to simultaneously visually emulate, via one or more profile display windows, a plurality of hardware characteristics indicative of performance of the mobile device when executing the application.”
40. As described in greater detail below, Defendant Cullen/Frost Bankers, Inc. has committed acts of infringement in this judicial district by using Apple’s Xcode and/or Google’s Android Studio (and/or other software development tools) to author mobile applications. Defendant Cullen/Frost Bankers, Inc. employees and/or agents within this judicial district have committed acts of infringement by using one or more claims and/or claim elements of the Patents-in-Suit.
41. As described in greater detail below, Defendant Cullen/Frost Bankers, Inc. has induced one or more third parties in this judicial district to author mobile applications on its behalf using Apple’s Xcode and/or Google’s Android Studio (and/or other software development tools) in an infringing manner.
42. As described in greater detail below, Defendant Cullen/Frost Bankers, Inc. has directly infringed at least '192 Patent Claim 60 by using, selling, offering for sale, and/or importing mobile applications in this judicial district, *e.g.*, by selling and offering for sale the “Frost”

¹⁷ See, *e.g.*, <https://www.frostbank.com/financial-technology/frost-bank-app> (“Deposit checks with your phone. On iOS and Android. Snap a picture to deposit your checks...”).

application through Apple's App Store and Google's Google Play Store in this district. The "Frost" application is a "system comprising an application configured to enable a user to modify a photo on a mobile device"¹⁸ and it was developed using "a software authoring platform configured to simultaneously visually emulate, via one or more profile display windows, a plurality of hardware characteristics indicative of performance of the mobile device when executing the application."

JOINDER OF DEFENDANTS

43. Joinder of Apple Inc.; Capital One, N.A.; Capital One Services, LLC; Frost Bank; and Cullen/Frost Bankers, Inc. as co-Defendants in this lawsuit is proper under 35 U.S.C. §299.

44. Wapp asserts that (a) it is entitled to relief against Defendants jointly, severally, and/or in the alternative with respect to or arising out of the same transaction, occurrence, or series of transactions or occurrences relating to the making, using, importing into the United States, offering for sale, or selling of the same accused product or process, and (b) questions of fact common to all Defendants will arise in the action.

45. For example, Plaintiffs allege that Apple directly infringes by making, using, selling, offering for sale, and/or importing its accused Xcode software and indirectly infringes by inducing each of its co-Defendants to use Apple's accused Xcode software in an infringing manner. Correspondingly, Plaintiffs allege that each of Apple's co-Defendants directly infringe by using Apple's accused Xcode software in an infringing manner.¹⁹ These infringement allegations against each Defendant relate to the same transaction, occurrence, or series of

¹⁸ See, e.g., <https://www.frostbank.com/financial-technology/frost-bank-app> ("Deposit checks with your phone. On iOS and Android. Snap a picture to deposit your checks...").

¹⁹ As set forth in more detail below, Plaintiffs' infringement claims against Apple's co-Defendants include but are not limited to their use of Xcode. Plaintiffs further allege, for example, that each of those co-Defendants infringe through their use of additional software authoring tools, including Google's Android Studio.

transactions or occurrences relating to the making, using, importing into the United States, offering for sale, or selling of the same accused product or process. Plaintiffs assert that they are entitled to relief against Defendants jointly, severally, and/or in the alternative with respect to or arising out of these acts of infringement. Questions of fact common to all Defendants will arise with respect to these acts of infringement. For example, many of the same questions of fact about the relevant features and functionality of Xcode, and much of the same evidence (including, for example, the same documents, source code, and testimony about Xcode), will be common to all Defendants in this lawsuit.

FACTUAL ALLEGATIONS

Development of the Patented Inventions

46. The inspiration for the patented innovations described herein originates from application development work by the named inventor for live sporting events, including the 2006 FIFA World Cup. Through his development work associated with these international sporting events, the named inventor of the patents-in-suit developed and created a first-of-its-kind application performance engineering platform. He realized that developing applications to support widely attended global events, such as the World Cup, presented unique challenges for application developers—these applications would be used by millions of users on a wide variety of devices having different attributes, and connecting to a wide variety of different networks with significantly different performance characteristics. To address these challenges, the named inventor invented an application authoring environment especially suited for creating applications for mobile devices. The invention enables developers to create the applications and ensure they will function correctly on a variety of mobile devices with varying device and network performance characteristics by emulating and monitoring specific characteristics of the devices and the networks to which they could connect. The named

inventor realized that such flexibility would be necessary to create mobile applications that would work satisfactorily in the plethora of scenarios to which real users would subject them.

47. The named inventor filed his initial provisional application (No. 60/689,101) on June 10, 2005. He subsequently filed non-provisional patent applications claiming multiple different aspects of his application authoring platform, including applications which issued as U.S. Patent Nos. 8,924,192 (filed on November 9, 2012), 9,298,864 (filed on November 19, 2013), 9,971,678 (filed on December 23, 2014), 10,353,811 (filed on May 14, 2018), and 10,691,579 (filed on March 28, 2016).

48. These patented innovations have become core to modern mobile application development and have been cited as prior art against later patent applications from industry leaders including Apple, Google, Intel, HPE, and Microsoft. For example, on October 31, 2012, WIPO rejected the claims submitted in an HPE patent application (Patent Application Serial No. PCT/US2012/024087) based on Plaintiffs' invention and awarded the inventor patents with the highest prior art designation globally.

Authoring Mobile Applications

49. Mobile applications are now typically created in an authoring environment (also called an integrated development environment or "IDE") tailored to meet challenges specific to mobile application development. The two most popular modern authoring environments are Apple's Xcode (used to author mobile applications for iOS devices such as iPhones and iPads) and Google's Android Studio (used to author mobile applications for smart phones and tablets running Google's Android operating system).

50. Authoring environments include the tools needed to create a mobile application and then verify that it will function correctly on a variety of mobile devices and under a variety of network conditions. For example, Xcode and Android Studio include (1) an editor window

where the developer will write the code, (2) a compiler that will transform the code into an application that will run on a mobile device, (3) tools to execute the compiled application on a variety of mobile devices or emulators so the application's performance can be verified on the selected devices and under a variety of network conditions, and (4) tools to monitor performance of the application while it is running.

Xcode

51. Apple's Xcode includes the features noted above, including the editor window reproduced below:



<https://developer.apple.com/documentation/xcode/creating-organizing-and-editing-source-files> (accessed December 8, 2023).

52. Xcode also includes a compiler that will transform the code into an application that will run on a mobile device:

Overview

Reducing build times by even a few seconds can have a significant impact over the course of development. Xcode does everything possible to build your code as fast as possible. It parallelizes build tasks and takes advantage of all available resources to output a finished product. However, you can help Xcode by making sure you're not creating unnecessary work for the compiler.

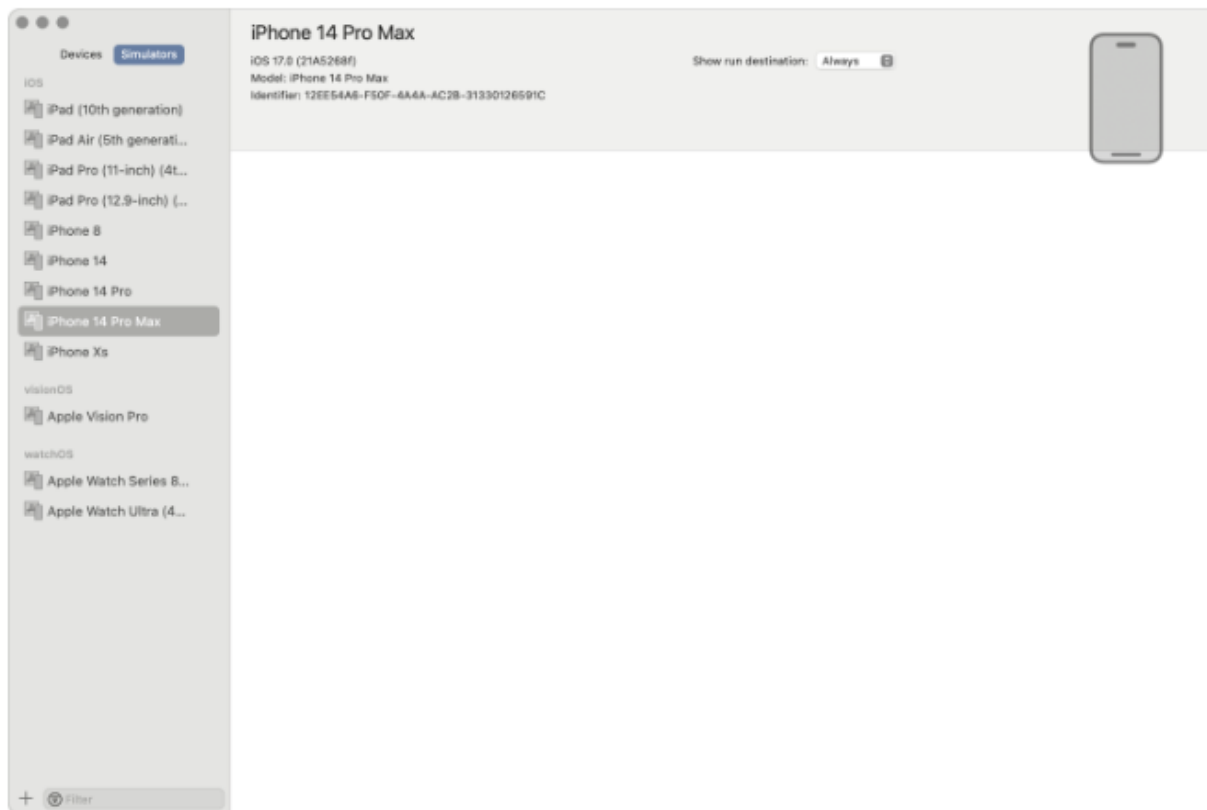
Over the years, Xcode's compiler has introduced optimizations to speed up compile times. Most of these optimizations are automatic, but some require you to make small changes to your code. In addition, projects that support both Objective-C code to Swift may require additional optimizations to ensure fast compile times.

<https://developer.apple.com/documentation/xcode/improving-build-efficiency-with-good-coding-practices> (accessed December 8, 2023).

53. Xcode further includes tools to execute the compiled application on a variety of mobile devices or emulators so the application's performance can be verified on the selected devices and under a variety of network conditions. Xcode provides the ability to transfer the compiled application to a physical device for verification. However, developers are unlikely to have access to a physical version of every device on which they wish to verify the mobile application. Therefore, Xcode also provides the ability to transfer the compiled application to an emulated/simulated device, running on a computer, which emulates characteristics of a physical device:

Configure the list of simulated devices

Manage real and simulated devices in the Devices and Simulators window in Xcode. To view this window, choose Window > Devices and Simulators. View and configure simulated devices from the Simulators tab.

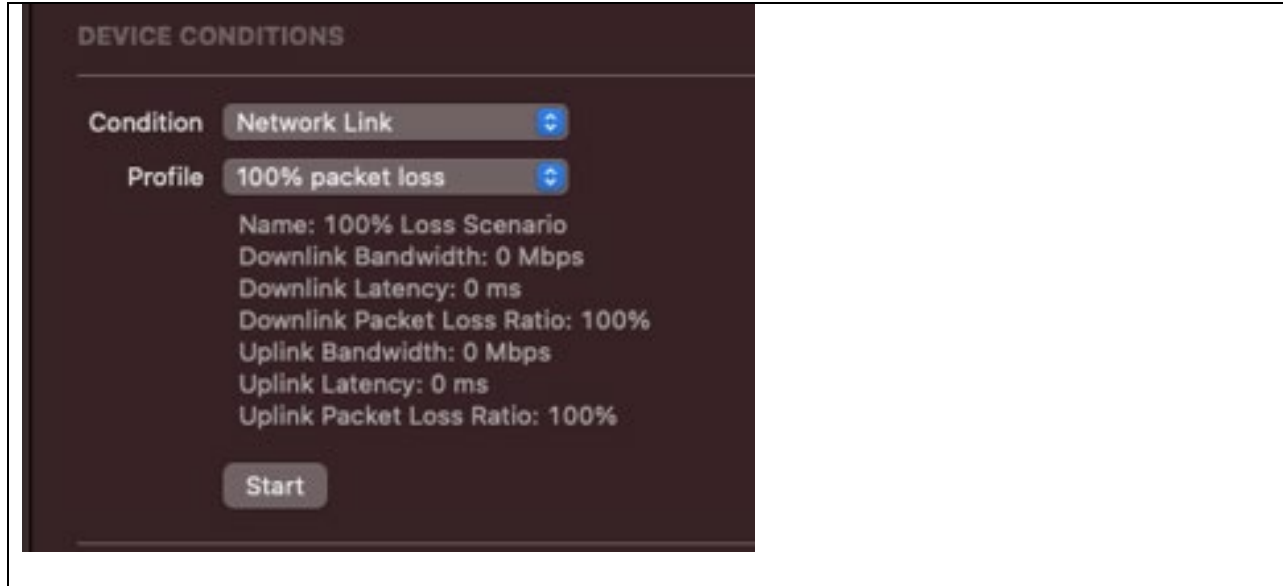


To add a new simulated device, click the plus (+) button at the bottom of the list of simulators and specify the configuration you want. You can add new simulators to specify a different device type or operating system version than the default set. To remove a simulator from the list, select it and press Delete.

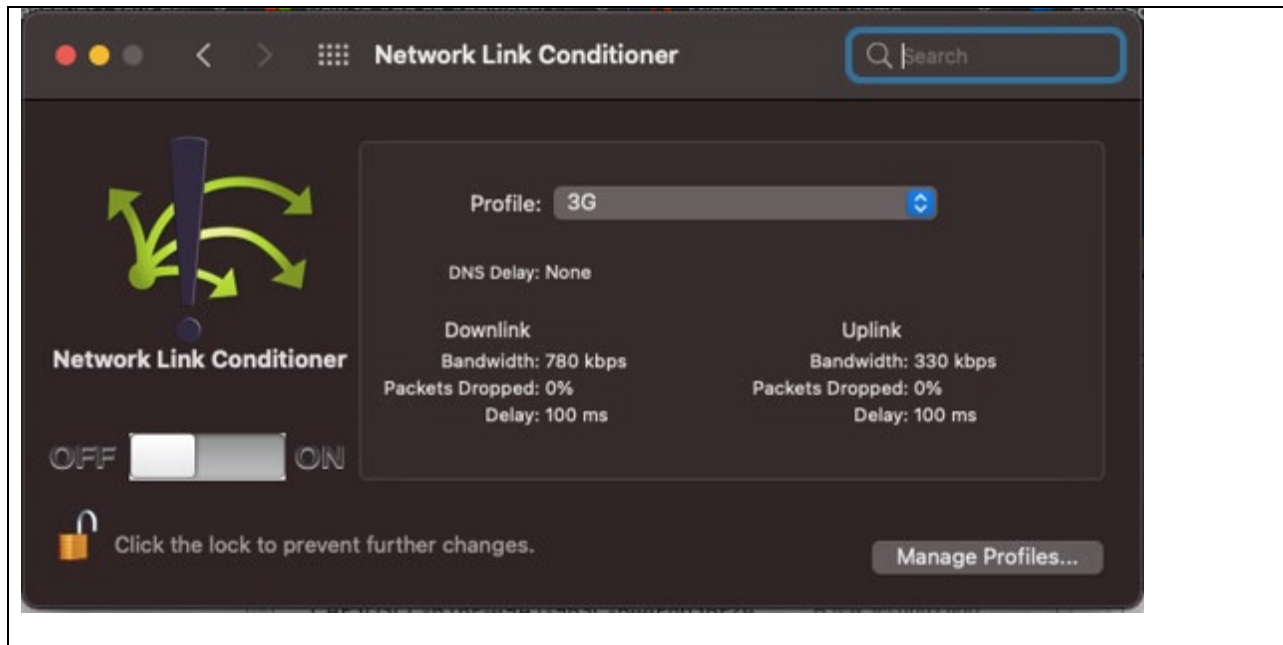
<https://developer.apple.com/documentation/xcode/running-your-app-in-simulator-or-on-a-device> (accessed December 8, 2023).

54. Developers can verify the compiled applications under a variety of network conditions. Network properties such as bandwidth, packet loss, and latency can be simulated in order to verify the applications operate properly under a variety of network conditions to which they

may be subjected:



Xcode: Device Conditions

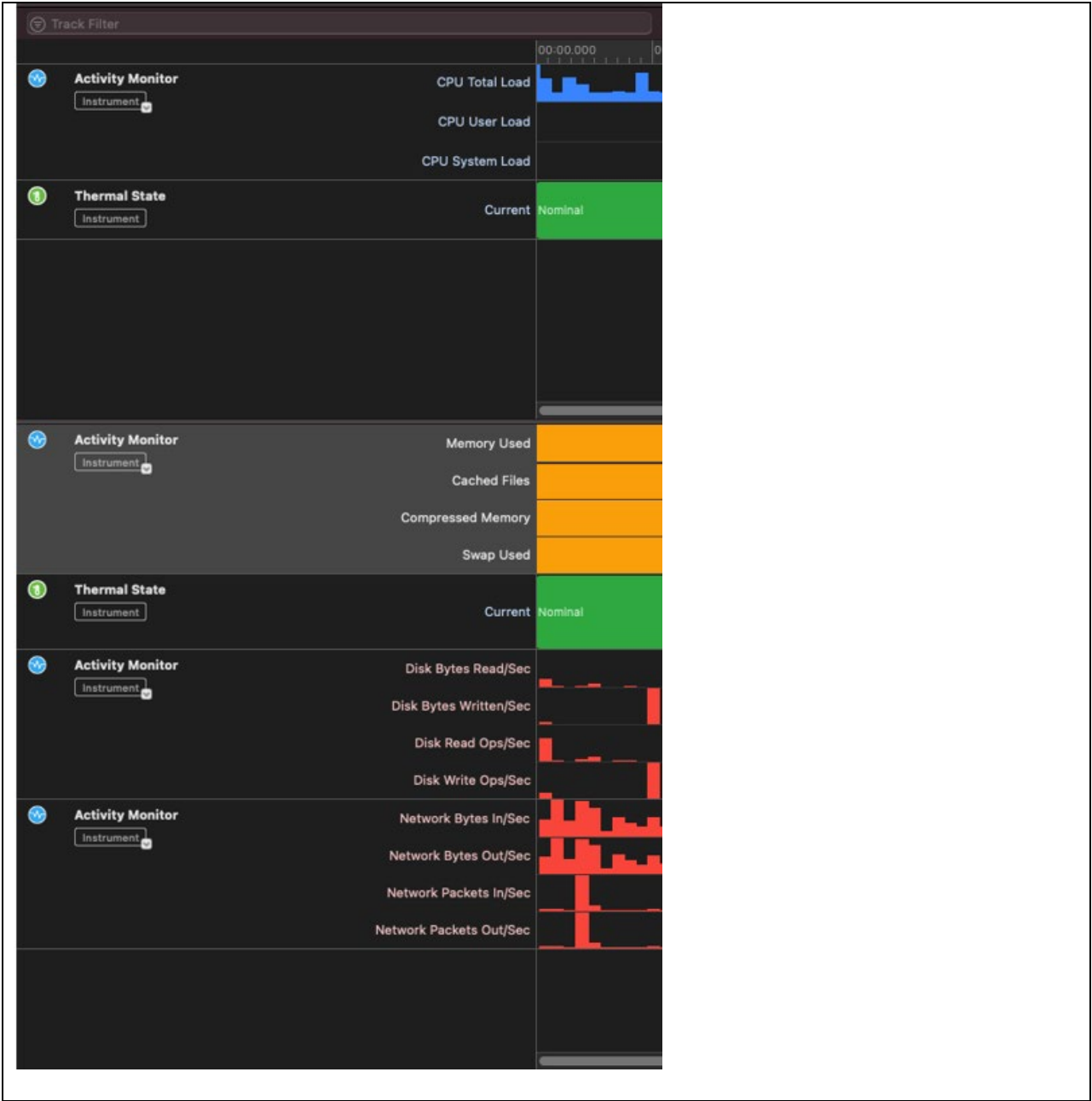


Xcode: Network Link Conditioner Utility

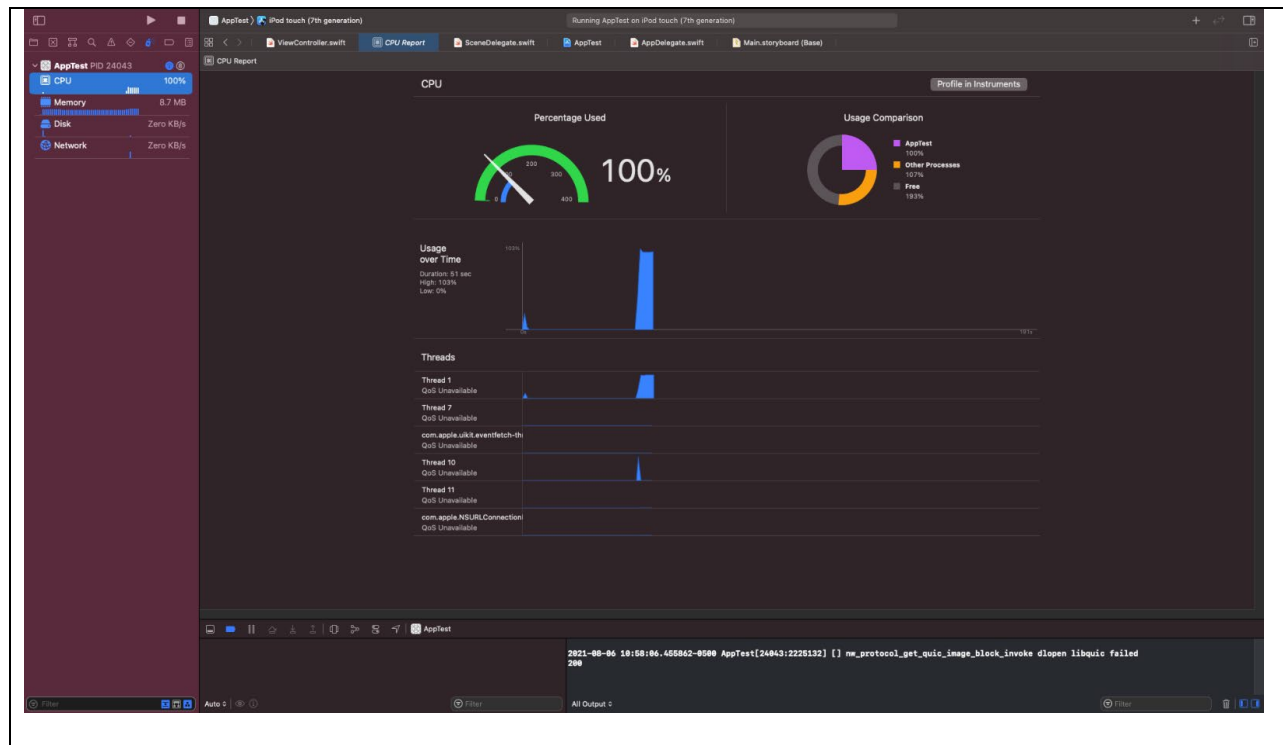
55. Xcode also includes tools to monitor the performance of an application while it is running.

Xcode provides tools to monitor the mobile application, regardless of whether it is executing on a physical device or an emulated device. Properties such as network characteristics, processor usage, memory usage, and disk usage can be monitored and displayed to enable the

developer to optimize the performance of the mobile application:

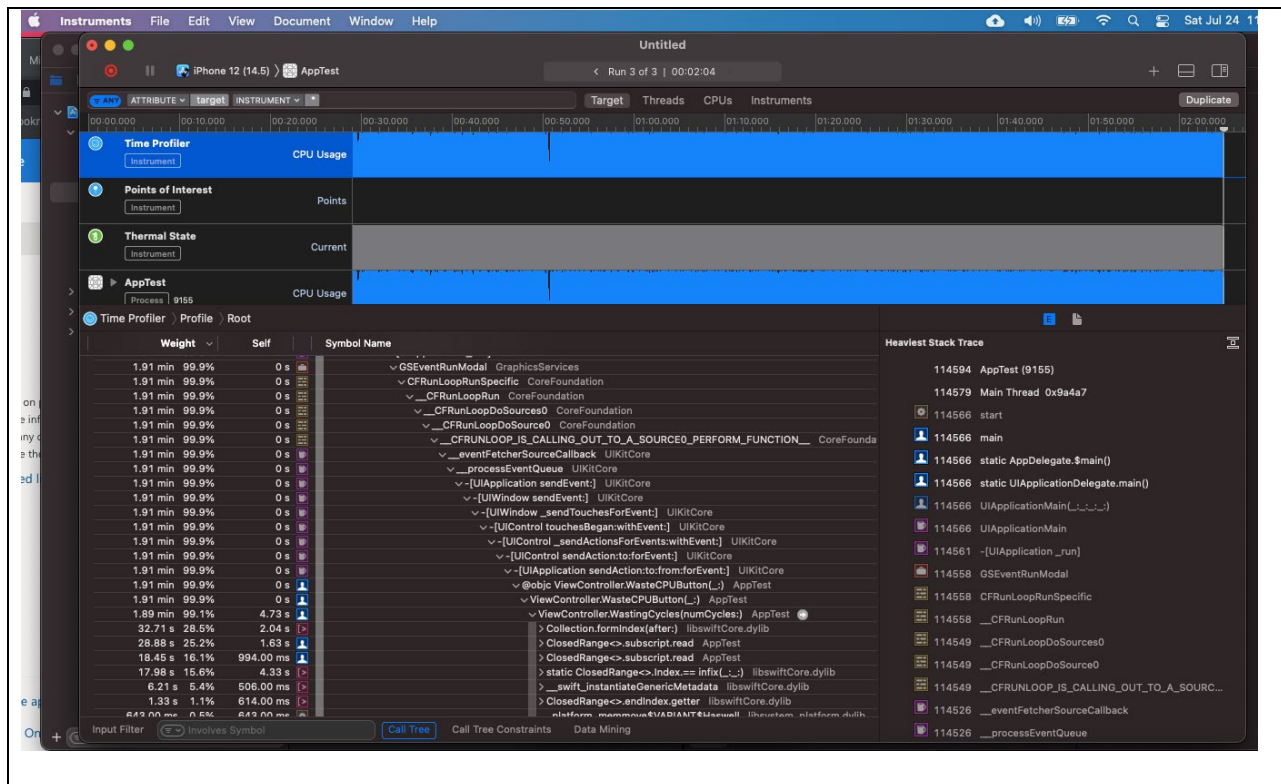


Xcode: Instruments



Xcode: CPU Report

56. Xcode can also be used to correspond the utilization of the displayed resources with the functions of the application responsible for that utilization, for example by using the Time Profiler:



Xcode: Time Profiler

57. The above features allow a developer to write mobile application code targeting a variety of device models and verify its performance in an efficient manner.

58. On June 8, 2010 at Apple’s World Wide Developers Conference (hereafter “WWDC”), Apple announced that a new version of Xcode would be released to the community of mobile App developers sometime in 2011 as part of the new Mac OS X Lion release.

59. On July 20, 2011, as part of the new Mac OS X Lion release, Apple launched Xcode 4.0 and a new product called Network Link Conditioner (hereafter “NLC”) to the mobile developer community (“Mobile Developer Community”). Furthermore, as part of the new NLC release, *Apple decided to pre-package NLC on all Apple devices including all iPhones and iPads sold since September 19, 2012.*

60. As a prelude to the release of NLC, on December 15, 2010 Apple filed US Application #12/969,494 titled “MOBILE HARDWARE AND NETWORK ENVIRONMENT

SIMULATION” (hereafter “Apple ‘494 Patent Application”—discussed further below). The patent application was filed by Ralph Zazula, Apple’s Director of Engineering and Apple’s Online Store; Greg Gilley, Apple’s Consumer and Pro Applications and Mark Malone, Apple’s Technology Evangelist.

61. Apple’s novelty declarations in connection with the ‘494 Patent Application before the USPTO were errant because Apple’s ‘494 Patent Application was filed over five years after WAPP’s 2005 priority date for the Patents-in-Suit. In fact, as described further below, the WAPP prior art was used by the patent examiner to reject Apple’s claims.

62. Furthermore, according to Apple, the widespread use of Xcode and the “Network Link Conditioner” is important to the mobile developer and should be used “*before you ship any software that uses networking*”:

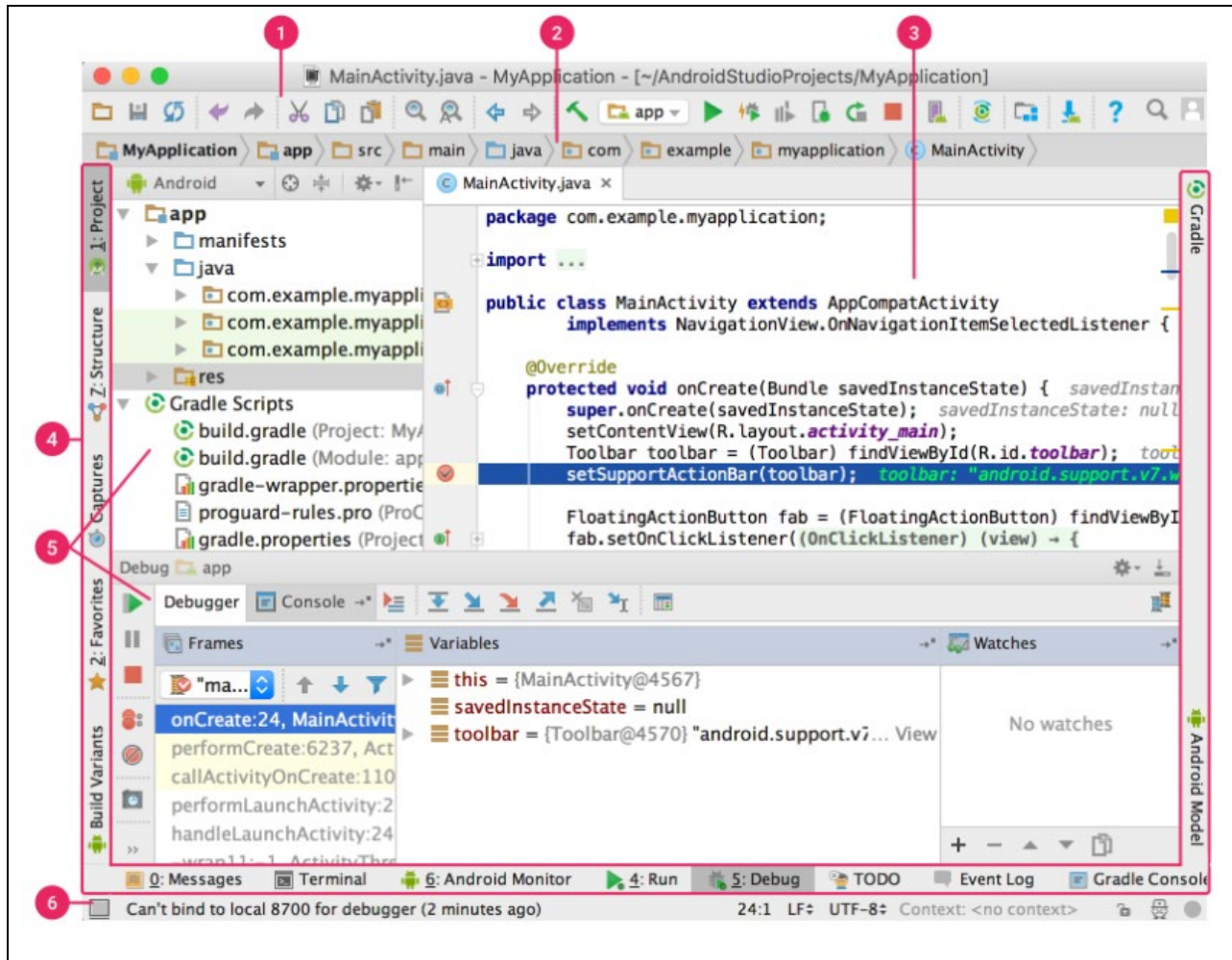
“Test Under Various Conditions

Xcode provides a tool called *Network Link Conditioner* that can simulate various network conditions, including reduced bandwidth, high latency, DNS delays, packet loss, and so on. *Before you ship any software that uses networking, you should install this tool, enable it, then run your software to see how it performs under real-world conditions.*”²⁰

Android Studio

63. Google’s Android Studio includes the features noted above, including the editor window illustrated below:

²⁰<https://developer.apple.com/library/IOs/documentation/NetworkingInternetWeb/Conceptual/NetworkingOverview/WhyNetworkingIsHard/WhyNetworkingIsHard.html>



<https://developer.android.com/studio/intro/user-interface> (accessed December 8, 2023).

64. Android Studio also includes a compiler that will transform the code into an application that will run on a mobile device:

Task	Description
Run External tool	Run an application that's external to Android Studio. In the External Tools dialog, select one or more applications that you want to run and then click OK . If the application isn't defined in Android Studio yet, add its definition in the Create Tools dialog. For more information, see Configuring Third-Party Tools and External Tools .
Run Another Configuration	Execute one of the existing run/debug configurations. In the Choose Configuration to Execute dialog, select a configuration to execute and then click OK .
Make	Compile the project or the module. Android Studio executes the Make Module command if the run/debug configuration specifies a particular module, or it executes the Make Project command if no modules are specified.
Make Project	Compile the project. Android Studio executes the Make Project command .

<https://developer.android.com/studio/run/rundebugconfig> (accessed December 8, 2023)

(highlighting added).

65. Android Studio further includes tools to execute the compiled application on a variety of mobile devices or device models (Android Virtual Devices) so that the application's performance can be verified on the selected devices under a variety of network conditions. Android Studio provides the ability to transfer the compiled application to a physical device for verification. However, developers are unlikely to have access to a physical version of every device on which they wish to verify the mobile application. Therefore, Android Studio provides the ability to transfer the compiled application to an emulated device running on a computer, which emulates the characteristics of a physical device:

Run apps on the Android Emulator

On this page

Get started with the emulator

Emulator system requirements

Create an Android Virtual Device

Run your app on the emulator

Navigate the emulator

Update the emulator

The Android Emulator simulates Android devices on your computer so that you can test your application on a variety of devices and Android API levels without needing to have each physical device. The emulator offers these advantages:

- **Flexibility:** In addition to being able to simulate a variety of devices and Android API levels, the emulator comes with predefined configurations for various Android phone, tablet, Wear OS, and Android TV devices.
- **High fidelity:** The emulator provides almost all the capabilities of a real Android device. You can simulate incoming phone calls and text messages, specify the location of the device, simulate different network speeds, simulate rotation and other hardware sensors, access the Google Play Store, and much more.
- **Speed:** Testing your app on the emulator is in some ways faster and easier than doing so on a physical device. For example, you can transfer data faster to the emulator than to a device connected over USB.

In most cases, the emulator is the best option for your testing needs. This page covers the core emulator functionalities and how to get started with it.

Alternatively, you can deploy your app to a physical device. For more information, see [Run apps on a hardware device](#).

<https://developer.android.com/studio/run/emulator> (accessed December 8, 2023).

Run apps on a hardware device

On this page

Set up a device for development

Connect to your device using USB

Connect to your device using Wi-Fi

Device mirroring

Known issues

Privacy notice

Troubleshoot device connection

Troubleshoot with the Connection Assistant

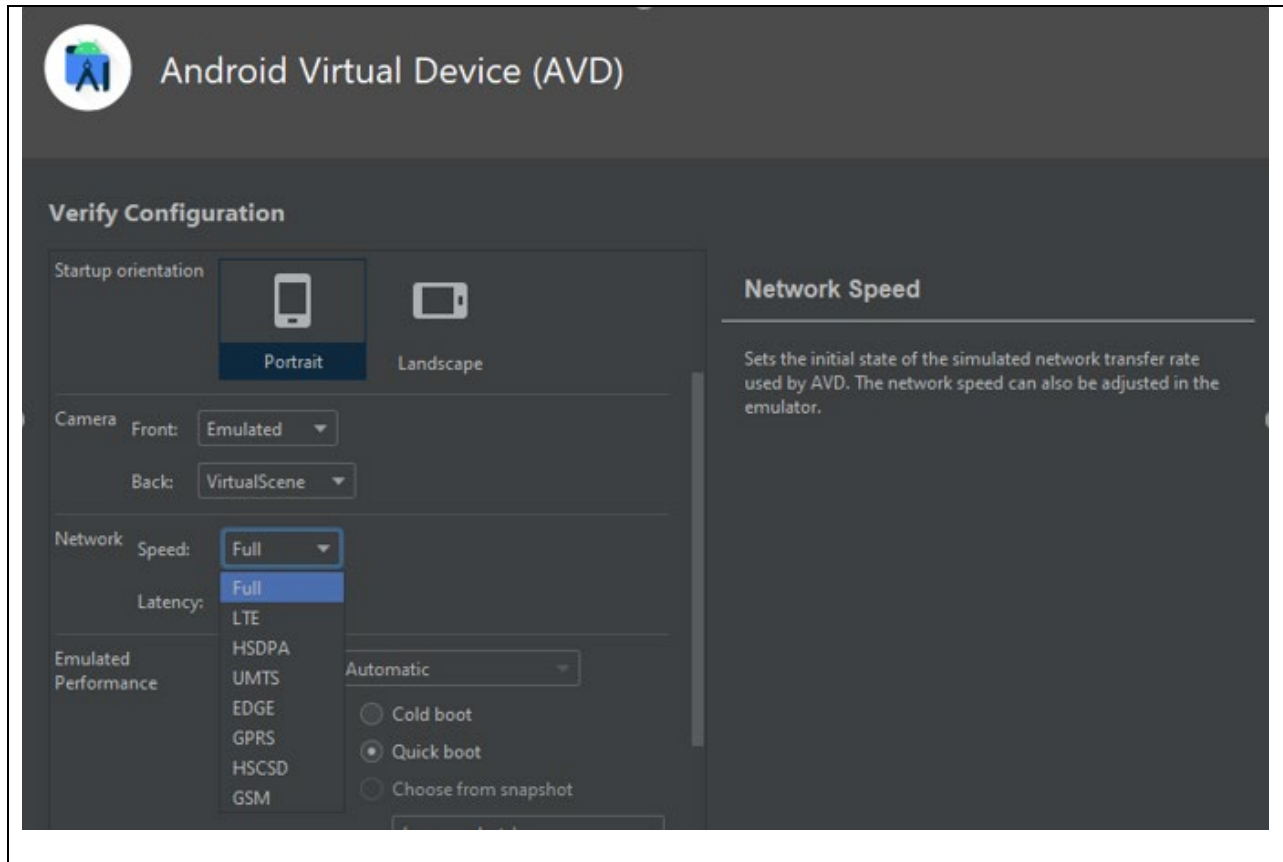
...

Always test your Android app on a real device before releasing it to users. This page describes how to set up your development environment and Android device for testing and debugging over an Android Debug Bridge (ADB) connection.

<https://developer.android.com/studio/run/device> (accessed December 8, 2023).

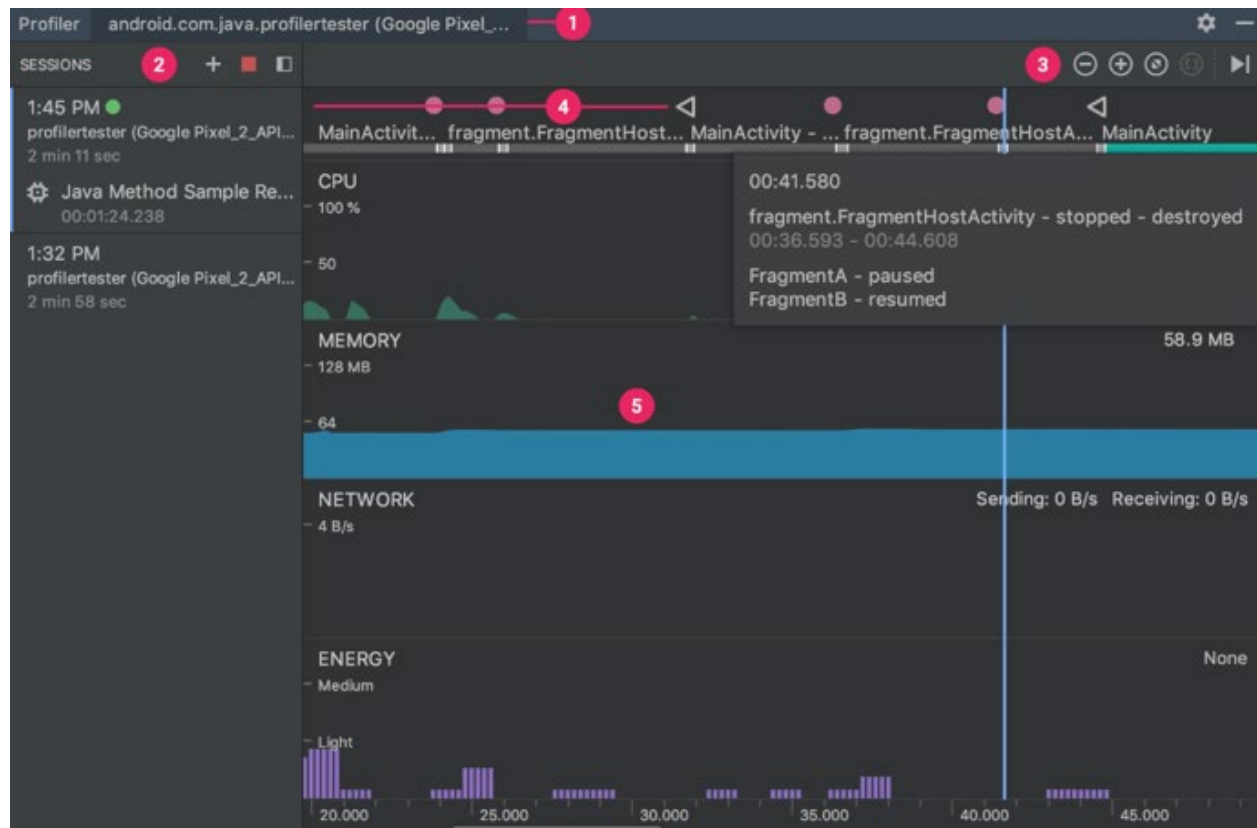
66. Developers can verify the compiled applications under a variety of network conditions.

Network properties such as speed and latency can be simulated in order to better verify that the application performs appropriately under a variety of network conditions to which it may be subjected:



Android Studio: Android Virtual Device Manager (showing Network Speed options).

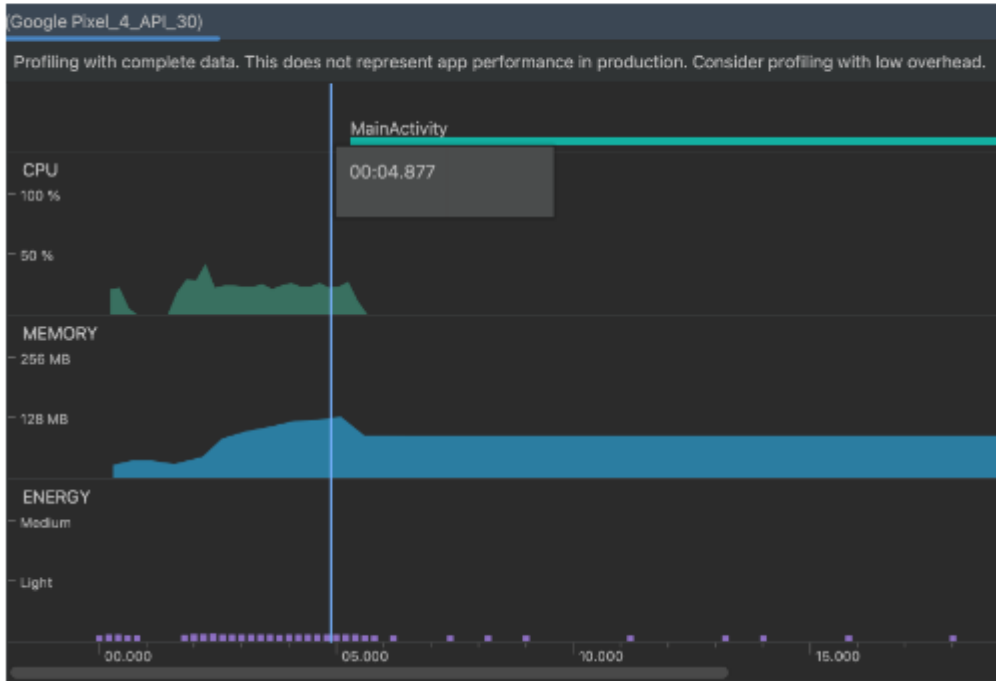
67. Android Studio includes tools (profilers) to monitor performance of the application while it is running. The pre-Bumblebee release of Android Studio provides tools to monitor the mobile application, regardless of whether it is executing on a physical device or an emulated device. Android Studio includes profilers providing such monitoring capabilities: CPU, Memory, Network, and Energy:



<https://developer.android.com/studio/profile/android-profiler> (accessed May 18, 2023).

68. In the Bumblebee release (and later releases), the Network Profiler functionality was moved to the Network Inspector window.

- Profile 'app' with complete data starts the CPU, Memory, and Energy profilers.



<https://developer.android.com/studio/profile/android-profiler> (accessed December 8, 2023).

Network Inspector overview

At the top of the Network Inspector window, you can see the event timeline. Click and drag to select a portion of the timeline and inspect the traffic.

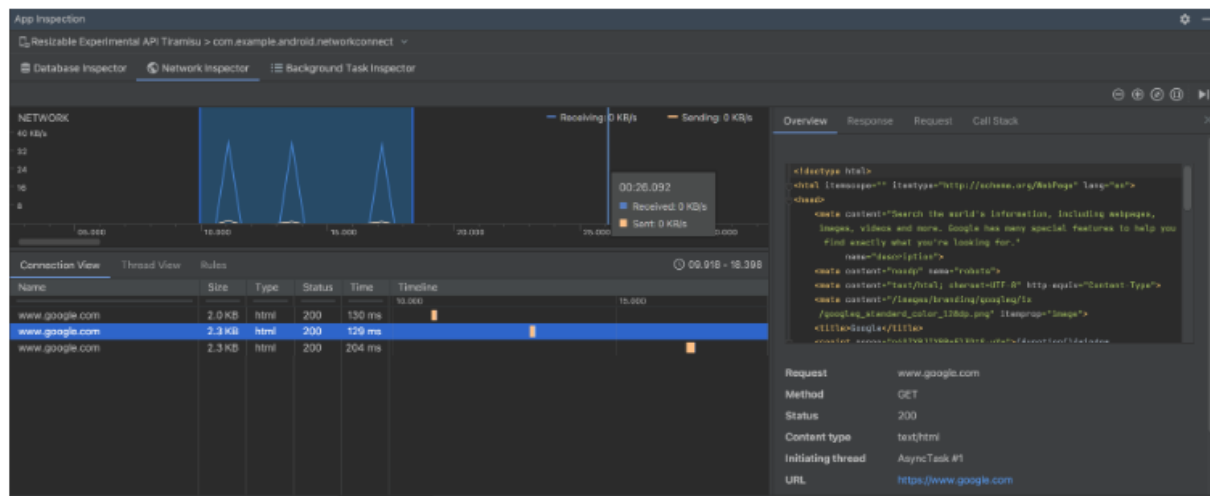


Figure 1. The Network Inspector window.

<https://developer.android.com/studio/debug/network-profiler> (accessed December 8, 2023).

69. Android Studio can also be used to correspond the utilization of the displayed resources with the functions of the application responsible for the utilization:

Inspect CPU activity with CPU Profiler

On this page

CPU Profiler overview

Optimizing your app's CPU usage has many advantages, such as providing a faster and smoother user experience and preserving device battery life.

You can use the CPU Profiler to inspect your app's CPU usage and thread activity in real time while interacting with your app, or you can inspect the details in recorded method traces, function traces, and system traces.

The detailed information that the CPU Profiler records and shows is determined by which recording configuration you choose:

- **System Trace:** Captures fine-grained details that allow you to inspect how your app interacts with system resources.
- **Method and function traces:** For each thread in your app process, you can find out which methods (Java) or functions (C/C++) are executed over a period of time, and the CPU resources each method or function consumes during its execution. You can also use method and function traces to identify *callers* and *callees*. A caller is a method or function that invokes another method or function, and a callee is one that is invoked by another method or function. You can use this information to determine which methods or functions are responsible for invoking particular resource-heavy tasks too often and optimize your app's code to avoid unnecessary work.

When recording method traces, you can choose *sampled* or *instrumented* recording. When recording function traces, you can only use sampled recording.

<https://developer.android.com/studio/profile/cpu-profiler> (accessed December 8, 2023).

70. The above features allow a developer to write the application code and verify its performance in an efficient manner.

The Prevalence of Mobile Applications

71. Smartphones and tablets have become ubiquitous and have created demand for mobile applications tailored to run on those devices. There are more than 1 billion active iPhone users and more than 3 billion active Android users.²¹ Apple and Google each provide their own app store, which enables users to easily find and download mobile applications developed by third parties.²² Mobile applications developed on either Xcode (for Apple) or Android Studio (for Google) can be submitted to the respective app store *if* the applications meet certain performance criteria.²³ In order to develop mobile applications that meet the criteria set out by Apple and Google, developers must utilize the authoring tools in Xcode or Android Studio that were first pioneered by the named inventor. If the mobile applications do not satisfy certain performance and debugging standards, then both Apple and Google will reject the mobile application for distribution in their respective app stores.

72. The availability of mobile applications has also had a drastic impact on the banking industry. Retail bank branch usage declined by 35% overall from 2015 to 2020, while retail banking usage among 18 to 24 year-olds declined by nearly 50%.²⁴ At the same time, the number of digital banking interactions increased by 15%.²⁵ The COVID-19 pandemic also increased the importance of mobile banking—“[a]ccording to a 2020 Deloitte survey of 2,000 Americans, the most important factor influencing a client’s likelihood of switching banks during COVID-

²¹ <https://www.businessofapps.com/data/apple-statistics/> (accessed December 8, 2023); <https://www.businessofapps.com/data/android-statistics/> (accessed December 8, 2023).

²² <https://www.apple.com/app-store/> (accessed December 8, 2023); <https://play.google.com/store/apps/> (accessed December 8, 2023).

²³ <https://developer.apple.com/app-store/review/guidelines/> (accessed December 8, 2023); <https://play.google.com/console/about/guides/releasewithconfidence/> (accessed December 8, 2023).

²⁴ <https://deloitte.wsj.com/articles/how-banks-can-redefine-the-digital-experience-01628093439> (accessed December 8, 2023).

²⁵ *Id.*

19 is a poorly designed mobile platform.”²⁶ Overall, more than 90% of banking customers under the age of 40 utilize mobile banking.²⁷ Mobile banking app features are regarded as one of the “key attractions” for younger customers selecting a new bank.²⁸ Studies indicate that 33% of Millennials would consider completely abandoning traditional brick and mortar banking in favor of an app.²⁹ With Millennials graduating from college, becoming professionals and already making up more than a third of the American labor force,³⁰ the convergence of the above two factors will change the core model of banking for generations to come.

73. Given that mobile applications are now the primary method through which many customers interact with their bank, a bank’s mobile application that is known to have “glitches” or “bugs” is likely to steer potential customers to other banks with better mobile application support.³¹ Millennials, who make up an ever increasing percentage of all mobile users, are much less forgiving concerning their application experience and will unapologetically delete an app just because the logo is not appealing.³² Similarly, a mobile banking application that performs slowly when trying to complete transactions is likely to steer potential customers

²⁶ *Id.*

²⁷ <https://www.forbes.com/sites/ronshevlin/2021/07/29/mobile-banking-adoption-has-skyrocketed-but-so-have-fraud-concerns-what-can-banks-do/> (accessed December 8, 2023).

²⁸ <https://thefinancialbrand.com/119897/bank-of-america-grabbing-1-in-3-gen-zs-and-millennials-with-mobile/> (accessed December 8, 2023).

²⁹ <https://www.temenos.com/news/2015/09/29/will-millennials-need-banks-in-the-future/> (accessed December 8, 2023).

³⁰ <https://www.pewresearch.org/short-reads/2018/04/11/millennials-largest-generation-us-labor-force/> (accessed December 8, 2023).

³¹ <https://www.forbes.com/advisor/banking/how-to-choose-mobile-banking-personal-finance-app/> (accessed December 8, 2023).

³² <https://www.comscore.com/Insights/Blog/5-Interesting-Facts-About-Millennials-Mobile-App-Usage-from-The-2017-US-Mobile-App-Report> (accessed December 8, 2023).

away.³³ Even mobile application characteristics as simple as poor screen readability on a user's device can drive away potential customers.³⁴

74. All of this underscores the need for companies to not only provide mobile applications, but to verify that those mobile applications will provide fast, bug-free performance on the wide variety of mobile devices used by customers and within a wide variety of environmental (*e.g.*, network) conditions presented by mobile customers. To accomplish that goal, mobile application developers must use specialized authoring tools that accommodate the unique demands presented by a wide variety of mobile devices across a vast array of global carriers and networks.

Patents-in-Suit

75. Defendants are infringing at least the following patents: (1) U.S. Patent No. 8,924,192; (2) U.S. Patent No. 9,298,864; (3) U.S. Patent No. 9,971,678; (4) U.S. Patent No. 10,353,811; and (5) U.S. Patent No. 10,691,579 (collectively the "Patents-in-Suit"). The Patents-in-Suit are attached hereto as Exhibits A-E. U.S. Patent No. 7,813,910 ("the '910 Patent"), which is incorporated by reference into each of the Patents-in-Suit, is attached hereto as Exhibit F.³⁵ Provisional Application No. 60/689,101 ("the '101 Provisional"), which is also incorporated by reference into each of the Patents-in-Suit, is attached hereto as Exhibit G.

Technical Problems Addressed

76. The patented inventions, which relate to development and testing of applications for mobile

³³ <https://www.forbes.com/sites/ronshevlin/2021/03/29/new-research-identifies-the-most-critical-mobile-banking-features/> (accessed December 8, 2023); <https://thefinancialbrand.com/108788/mobile-banking-app-customer-experience-user-security-click/> (accessed December 8, 2023).

³⁴ <https://thefinancialbrand.com/108788/mobile-banking-app-customer-experience-user-security-click/> (accessed December 8, 2023).

³⁵ The '910 Patent is not being asserted in this proceeding, but certain citations will be made to its disclosure due to its incorporation by reference into each of the Patents-in-Suit.

devices, provided substantial improvements over the prior art and would eventually be recognized as critical to mobile application development. Today, these patented solutions have been incorporated into leading software for mobile application development and testing, including Xcode and Android Studio.

77. Prior to filing his June 10, 2005 provisional application, the inventor recognized that the mobile device market was evolving much more quickly than the broader eCommerce market as a whole.³⁶ However, applications intended for use on mobile devices were achieving little success despite the growth of the mobile device market.³⁷ The inventor determined that this failure was due to limitations of the tools that were being used to develop mobile applications.³⁸ In response, he identified multiple technical shortcomings in existing software and hardware tools and invented concrete solutions to overcome those shortcomings and improve the functionality of the tools.

78. The inventor identified several different existing tools that were deficient, including Flash/FlashLite, Java/J2ME, .Net, and BREW.³⁹ He noted that existing development tools were often targeted at developing for a single mobile device type, and therefore quickly became obsolete.⁴⁰ Such solutions could not support the rapid development needed to serve the quickly diversifying mobile market.⁴¹

79. He also noted that attempts to adapt application development tools previously targeted at the desktop computer market (such as Flash and Java) to work for mobile devices were deficient because they failed to provide the ability to develop and test for the large number of diverse

³⁶ '910 Patent at 1:14-23; '101 Provisional at WAPP-RJ-000448-449, -000453.

³⁷ '101 Provisional at WAPP-RJ-000453.

³⁸ *Id.* at WAPP-RJ-000448-451, -00453-457; '910 Patent at 1:24-67.

³⁹ '910 Patent at 1:24-62; '101 Provisional at WAPP-RJ-000446-448, -000450-451, -00453-457.

⁴⁰ '910 Patent at 1:18-24, 12:33-35.

⁴¹ *Id.*

mobile device types.⁴² For example, for Flash Lite (the “mobile” version of Flash), he observed that “[t]he inherent needs of the Flash Lite developer are very different from those of its sister developer in Flash. Unlike the PC market, Flash Lite application development involves realtime authoring and testing of the product on all addressable handset platforms.”⁴³ However, while Flash could generically “simulate operation of the application,” it was not capable of simulating how the application would operate on a specific type of mobile device model.⁴⁴ As a result, “[a]lthough a Flash Player application may operate correctly on one mobile device model, it may crash when playing on a different mobile device model.”⁴⁵ The only way that such issues could be detected and avoided was to have access to “all available mobile devices” and “transfer[] and test[] [the application] on a mobile device representative of each targeted mobile device type”—something which simply was not possible at the time.⁴⁶ The same was true of software development tools such as Java. While J2ME was the “mobile” version of Java, it too failed to provide mechanisms to test on all handset platforms as needed to ensure a functional mobile application.

80. Furthermore, “[d]uring development of an application for a mobile device, an application author may transfer and play the application hundreds of times (development life cycles) on the targeted mobile device before identifying and correcting all system resource problems within the application.”⁴⁷ Therefore, even if a developer somehow had access to every possible type of physical mobile device, it would have been a virtual impossibility to repeatedly transfer the application under development to each mobile device type for testing

⁴² ’910 Patent at 1:24-67; ’101 Provisional at WAPP-RJ-000448.

⁴³ ’101 Provisional at WAPP-RJ-000448 (emphasis added).

⁴⁴ ’910 Patent at 1:24-62.

⁴⁵ *Id.* at 1:36-43.

⁴⁶ *Id.* at 1:44-67.

⁴⁷ *Id.* at 1:53-57.

across the number of development cycles typically required to develop a satisfactory mobile application.⁴⁸

81. The problem of how to address the large and diverse population of mobile devices was not the only unaddressed problem that the inventor identified and solved. He also recognized that, due to their mobile nature, mobile devices often operate in different network conditions than desktop computers. At the time of the invention, a desktop computer was typically connected to a network through a wired connection, yielding constant connectivity and consistent data transfer speeds. On the other hand, mobile devices connect to a network (typically a cellular network) through a wireless connection to maintain “mobility” of the mobile device. Because a mobile device user is often using the device on the go, a network connection may not always be available. And even when a wireless network is available, it may provide poor data transfer speeds and an unreliable (or unstable) connection as the user moves relative to the wireless network access point or cell tower. Given those constraints, the inventor recognized it would be important to not only run tests to verify that a mobile application’s network communications operated correctly, but also to test that the mobile application would be responsive despite the varied network conditions that a mobile device was likely to encounter during mobile use. Mobile devices cannot be expected to have consistent access to stable networks, but rather must be tested on unstable networks as well (conditions which would not be feasible to consistently reproduce on an actual network). Even if it were possible to locate networks to test on for all possible conditions, the developer would “need to travel to a wireless network location whilst testing each mobile device before public release,” which

⁴⁸ *Id.* at 1:59-62.

simply would not be feasible.⁴⁹

82. The inventor recognized that at the time it was not possible to “measure and emulate network characteristics within each market”⁵⁰ as needed to perform those kinds of network tests.⁵¹ For example, both Flash/Flash Lite and Java/J2ME did not provide network emulation/simulation to enable testing against the range or plurality of network characteristics that a mobile device was likely to encounter in various mobile environments (or mobile markets). These shortcomings meant that it was not possible with the existing Flash/Flash Lite and Java/J2ME tools to adequately test different network conditions through simulation.

83. Because then-existing mobile application development tools did not provide for device-specific testing in a variety of potential network environments that mobile devices are likely to encounter (and which cannot all be reliably recreated), the inventor recognized that mobile applications would continue to fail or underperform on certain mobile devices, resulting in application crashes and unsatisfactory user experiences.⁵² The inventor further recognized that it was not enough to simply recreate the kinds of network and mobile device characteristics that would lead to crashes and unsatisfactory user experiences. He also recognized that new types of mobile application development tools and user interfaces would also be needed to enable a developer to not just identify that problems existed, but also to identify which parts of the application were underperforming and causing problems, for example, because the capabilities of one or more available resources of the mobile device (e.g., CPU, memory, etc.) were not adequate to process the application.

⁴⁹ *Id.* at 12:17-21, 12:38-43.

⁵⁰ Market is a term commonly used in the cellular industry to refer to the geographic location of a base station or cellular network access point.

⁵¹ *Id.* at 1:63-67.

⁵² *Id.* at 1:35-62, 6:41-50, 7:10-17.

The Inventor's Unconventional Solutions to the Technical Problems

84. In response to these technical problems in the various computer-based tools used for mobile application development, the inventor developed multiple specific technical improvements.

Mobile Device Emulation/Simulation

85. First, the inventor developed the ability to emulate/simulate each of the *specific* mobile device types, which differed from prior solutions that provided device-agnostic emulation and simulation unconstrained by the particular hardware characteristics of a mobile device type.⁵³ This is achieved, in part, by emulating/simulating mobile device characteristics that are indicative of the performance of specific mobile device types. Exemplary characteristics are shown in '910 Patent Table 1:⁵⁴

TABLE 1	
Mobile Device Characteristics	
Parameter	Value
Name	NOKIA 3650
Processor	ARM 4T
Processor Speed	104 MHz
Storage Access Speed	5.88 files/second
RAM Size	256 MB
Storage Size	512 MB
Display Width	256
Display Height	394
Pixel Depth	24
Processor Availability	60%
RAM Availability	60%
Storage Availability	40%

86. These characteristics can significantly affect the performance of an application being run on the device. For example, a device with a slower processor speed will generally process data slower than a device with a faster processor speed, and a device with slower storage access

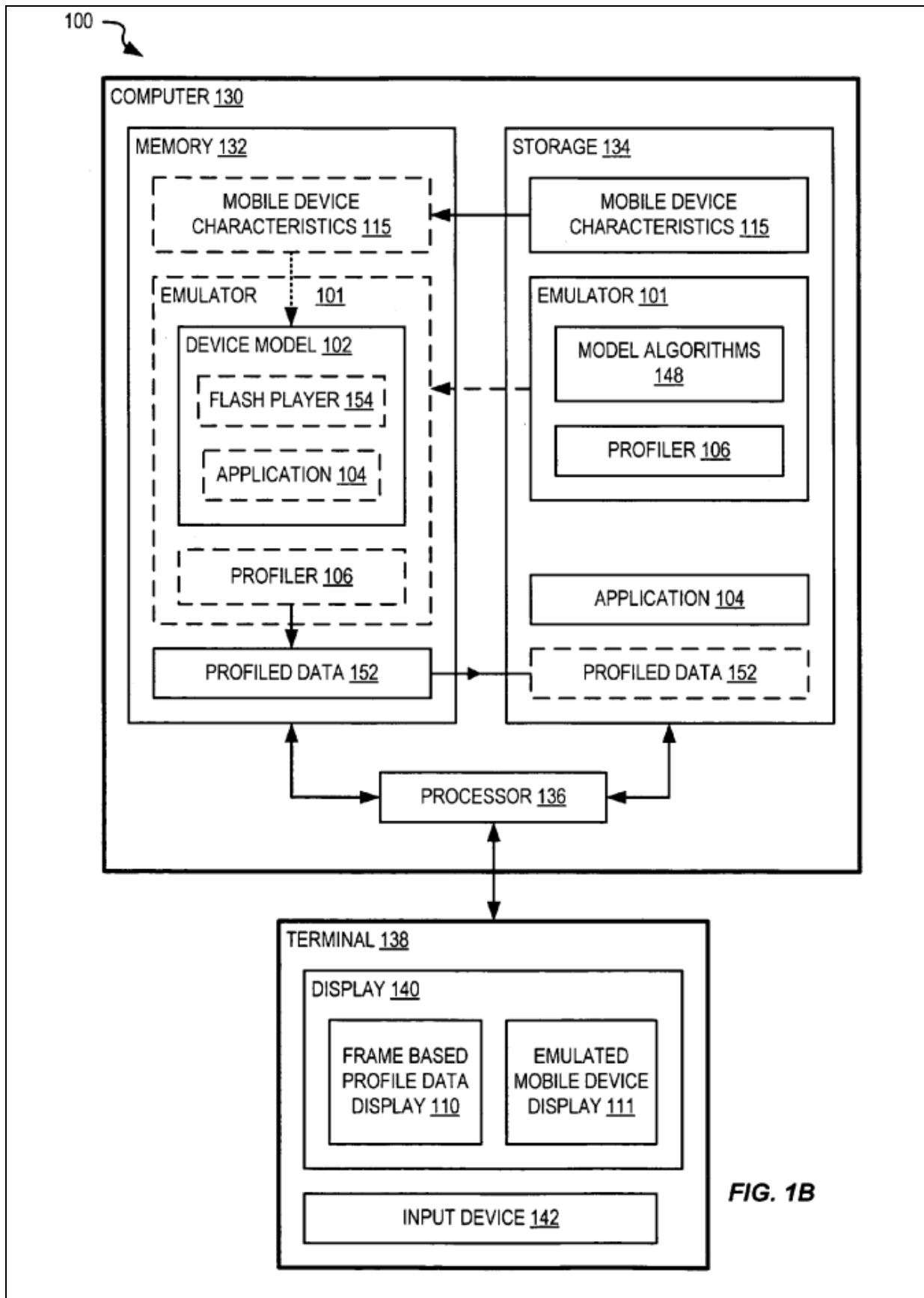
⁵³ '101 Provisional at WAPP-RJ-000448, -000451; '910 Patent at Abstract, Figs. 1A, 1B, 2, 4-12, 14, 2:1-17, 2:25-47, 3:19-31, 3:46-6:19, 6:31-9:33, 10:22-28, 10:46-12:65.

⁵⁴ '910 Patent at 4:20-35.

speed will generally load (and store) data slower than a device with faster storage access speed. Thus, an application tested against one mobile device type (with premium hardware) may appear to run successfully, while on the majority of mobile device types it would operate very poorly.

87. The Patents-in-Suit further teach how to utilize these mobile device characteristics to emulate/simulate a mobile device. For example '910 Patent "FIG. 1B shows one exemplary embodiment of the system of FIG. 1A within a computer," and "FIG. 1A shows one exemplary embodiment of a system for emulating, authoring and visually profiling an application playing on a mobile device...":⁵⁵

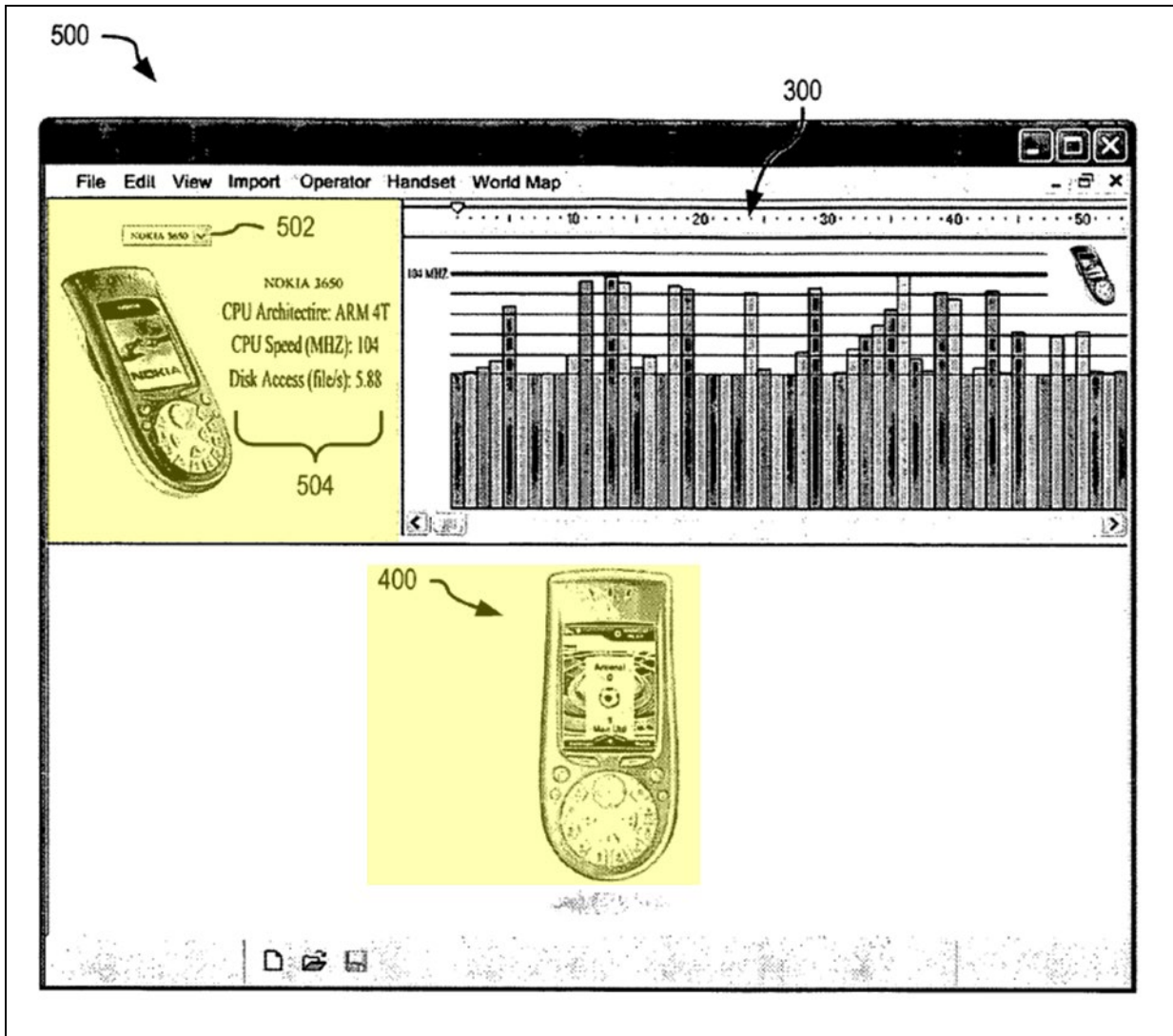
⁵⁵ *Id.* at Figs. 1A-1B, 2:51-55.



88. “A user of system 100 may [] select one or more target mobile devices from a list based upon available characteristics 115. As appreciated, additional or fewer characteristics may be included within characteristics 115 to specify performance of mobile device.”⁵⁶ “Device model 102, within emulator 101, has a modeled display 210, a modeled processor 212, modeled input keys 214, modeled memory 216 and modeled non-volatile storage 218. In this example, modeled display 210 represents display 118 of mobile device 114, FIG. 1, processor 212 represents a processor (not shown) of mobile device 114, modeled input keys 214 represent input keys 120 of mobile device 114, modeled memory 216 represents memory (e.g., RAM) of mobile device 114 and modeled non-volatile storage 218 represents non-volatile storage (e.g., flash memory, disk drive storage) of mobile device 114. Fewer or more elements and/or components of mobile device 114 may be modeled within device model 102.”⁵⁷
89. ’910 Patent Figure 5 (annotated) further shows an example of using these mobile device characteristics to simulate/emulate a mobile device type.

⁵⁶ *Id.* at 5:1-6.

⁵⁷ *Id.* at 6:1-13.



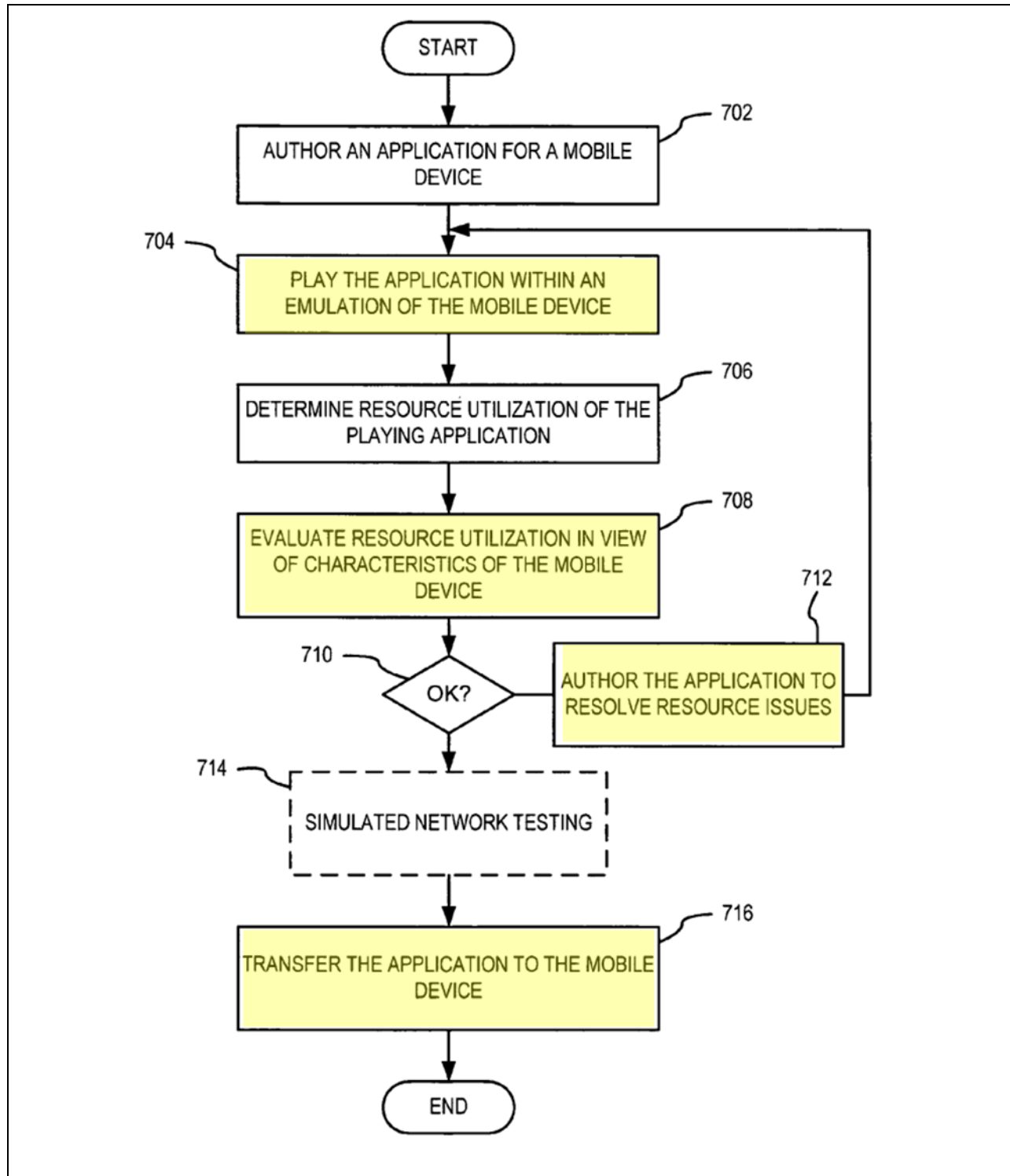
90. In this example, the user has selected a Nokia 3650 mobile phone, and the relevant device characteristics (including CPU Speed and Disk Access speed) are used to emulate/simulate the mobile device. The display identified as 400 is the emulated or simulated mobile phone with which the developer can interact to test the mobile application. By testing on various emulated or simulated mobile devices with different characteristics, users can identify problems they might otherwise miss if they only tested on a single device type. “For example, a NOKIA 6600 has a 16% reduction in ARM CPU speed and available memory resources compared to a NOKIA 7610, thus an application that plays correctly on the NOKIA 7610 may not play

correctly on the NOKIA 6600 due to this drop in inherent resources.”⁵⁸

91. The Patents-in-Suit teach that these emulated/simulated versions of the mobile device can be used until the author is able to resolve issues with the application that might be specific to that type of mobile device. Once these issues are resolved and the application is “OK” to move forward, the application can be transferred to a physical mobile device for further testing, as shown in annotated Figure 7:⁵⁹

⁵⁸ ’910 Patent at 1:38-43.

⁵⁹ *Id.* at Fig. 7, 8:5-55, 12:44-48.



Network Emulation/Simulation

92. The inventor also addressed the problem of being unable to develop and test mobile

applications under the varied scenarios to which they would be subjected when used on mobile devices in the real world without stable and consistent network connections. The Patents-in-Suit teach simulation/emulation of networks that a mobile device is likely to encounter during real world usage by using specific network characteristics indicative of how a mobile device will perform when executing the mobile application under those conditions.⁶⁰ For example, the network simulator may control the available bandwidth in order to simulate an application's performance when the device is connected to a slower wireless network (e.g., a 3G network when Wi-Fi is not available).⁶¹ A developer could then use the network simulation to identify portions of the mobile application that function poorly when forced to operate on the slower or less reliable connections sometimes found on public networks.

93. '910 Patent Figure 8 is a diagram showing one embodiment wherein an emulator 101 includes a network simulator interface 804.⁶²

⁶⁰ '910 Patent at Figs. 7-13, 8:41-51, 8:56-12:43.

⁶¹ *Id.* at 10:29-45.

⁶² *Id.* at Fig. 8, 3:4-7

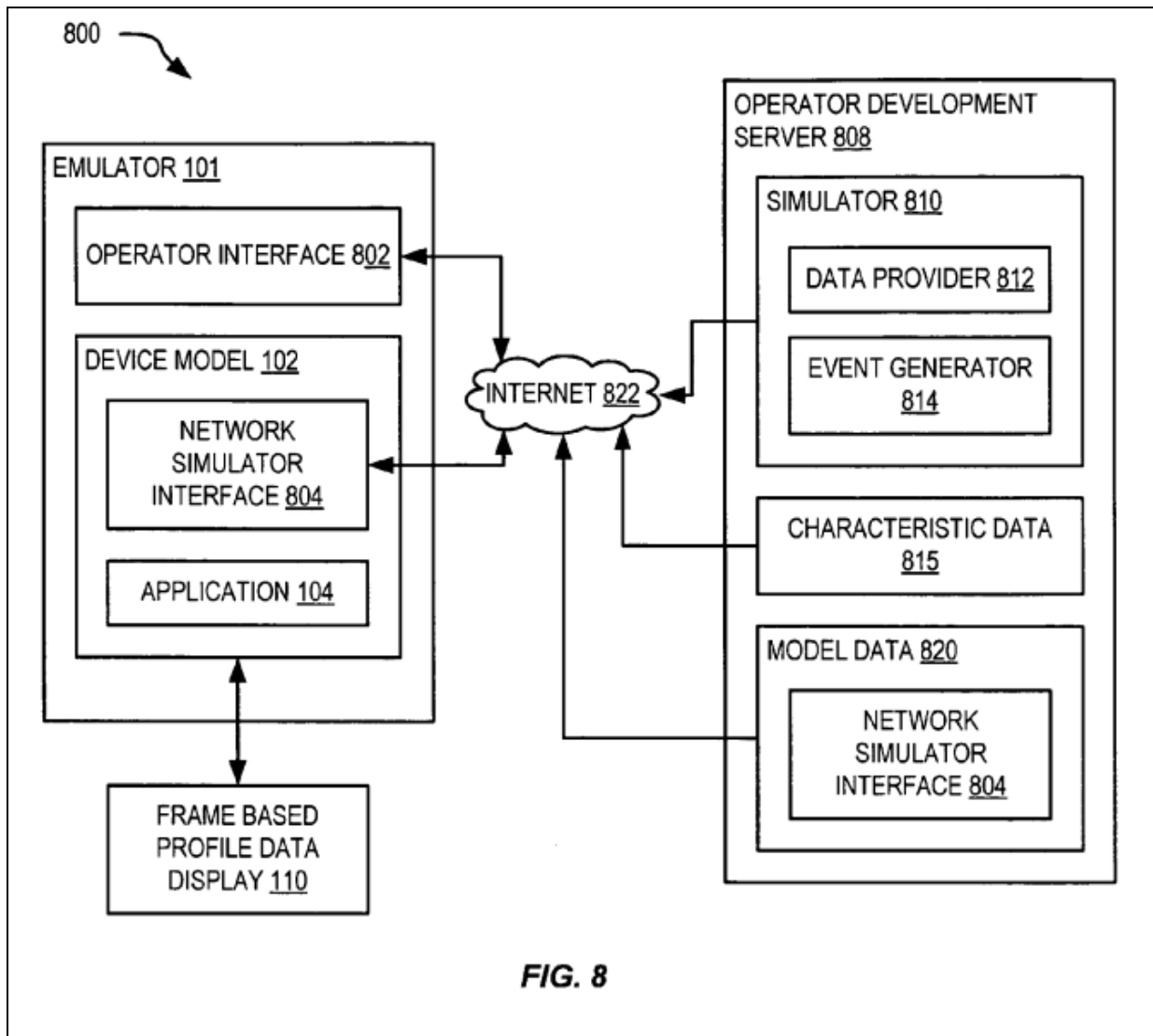


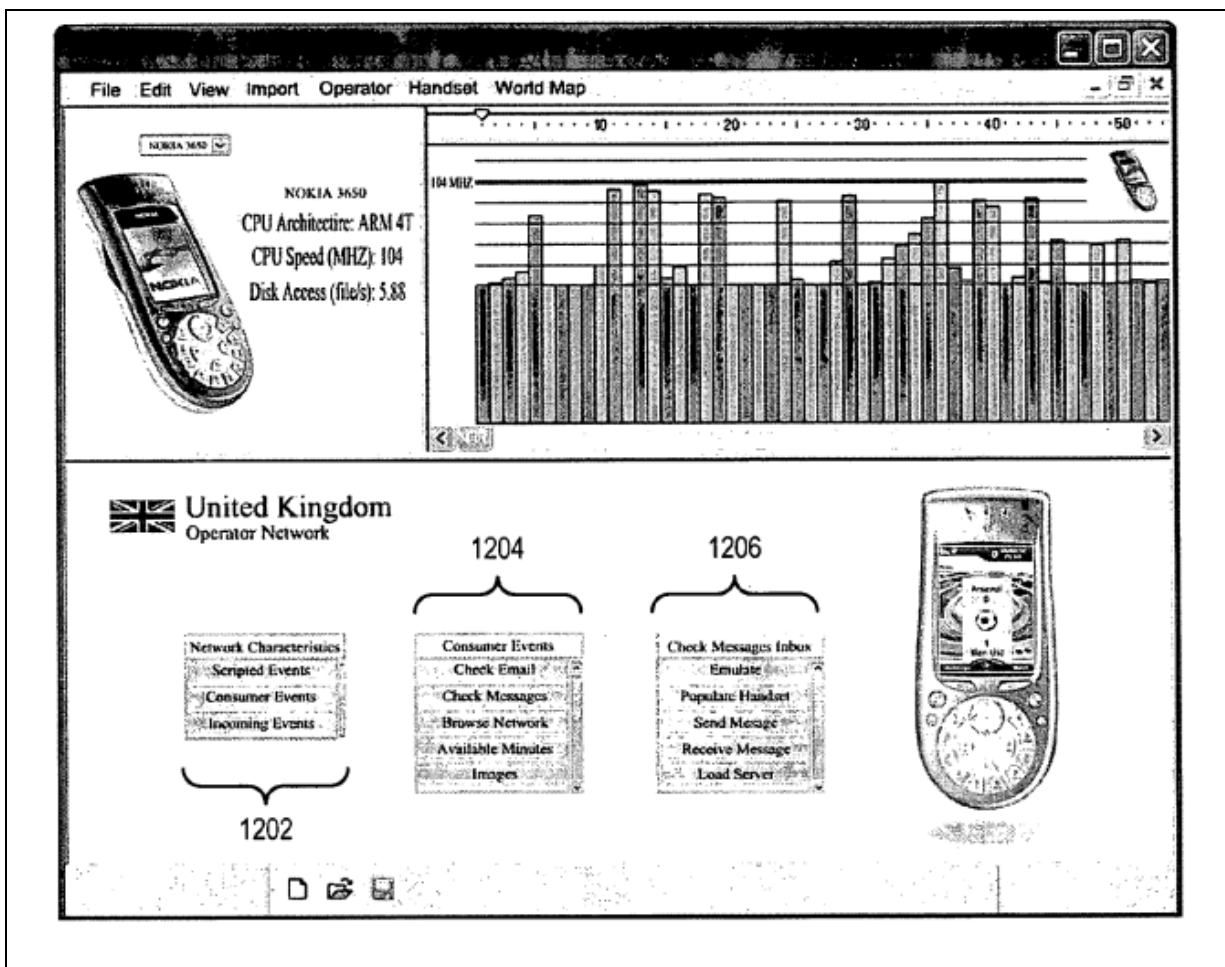
FIG. 8

94. “Network simulator interface 804 includes functionality that allows device model 102 to communicate with simulator 810 to simulate connectivity of mobile device 114 with a wireless network.”⁶³ “Thus, as application 104 plays within model 102, the effects of device 114 interacting with a wireless network are simulated such that frame based profile data display 110 shows resource utilization that includes the live or scripted effects of interaction

⁶³ *Id.* at 9:33-37.

with the wireless network.”⁶⁴

95. Figure 12 shows an embodiment that enables a user to select desired network characteristics relevant to a mobile device for simulation:⁶⁵



96. The window shows a list of network characteristics (such as bandwidth) that may be simulated.⁶⁶ The Patents-in-Suit further teach exemplary methods of configuring wireless network simulation for mobile devices.⁶⁷

⁶⁴ *Id.* at 9:40-45.

⁶⁵ *Id.* at Fig. 12, 10:26-28.

⁶⁶ *Id.* at 10:29-45.

⁶⁷ *Id.* at Fig. 13, 10:57-11:41.

Profiling, Profile Displays, and Correlating Resource Utilization to The Parts of the Application Using the Resources

97. Third, the inventor addressed the problem of how to quickly identify what parts of the mobile application are performing poorly due to resource limitations so that the poorly performing code can be corrected.⁶⁸ Based on the previously discussed new abilities to simulate/emulate mobile device hardware and network characteristics, developers would be able to test on a variety of mobile device models and networks that a mobile application might encounter. These abilities are focused on testing under particular resource constraints that were not previously available for mobile application development. In light of such constraint-driven testing, the Patents-in-Suit also teach applying “stress” to the mobile device running the application and profiling resource usage in order to identify “areas where failure may occur.”⁶⁹

98. The Patents-in-Suit further teach particular tools to help identify specific parts of the mobile application that experience problems when certain resources are stressed.⁷⁰ The Patents-in-Suit detail multiple exemplary profilers that monitor and record profiled data including resources used by the application.⁷¹ Several exemplary profile modules (including processor, memory, graphics, and system) are shown in annotated Figure 2.⁷²

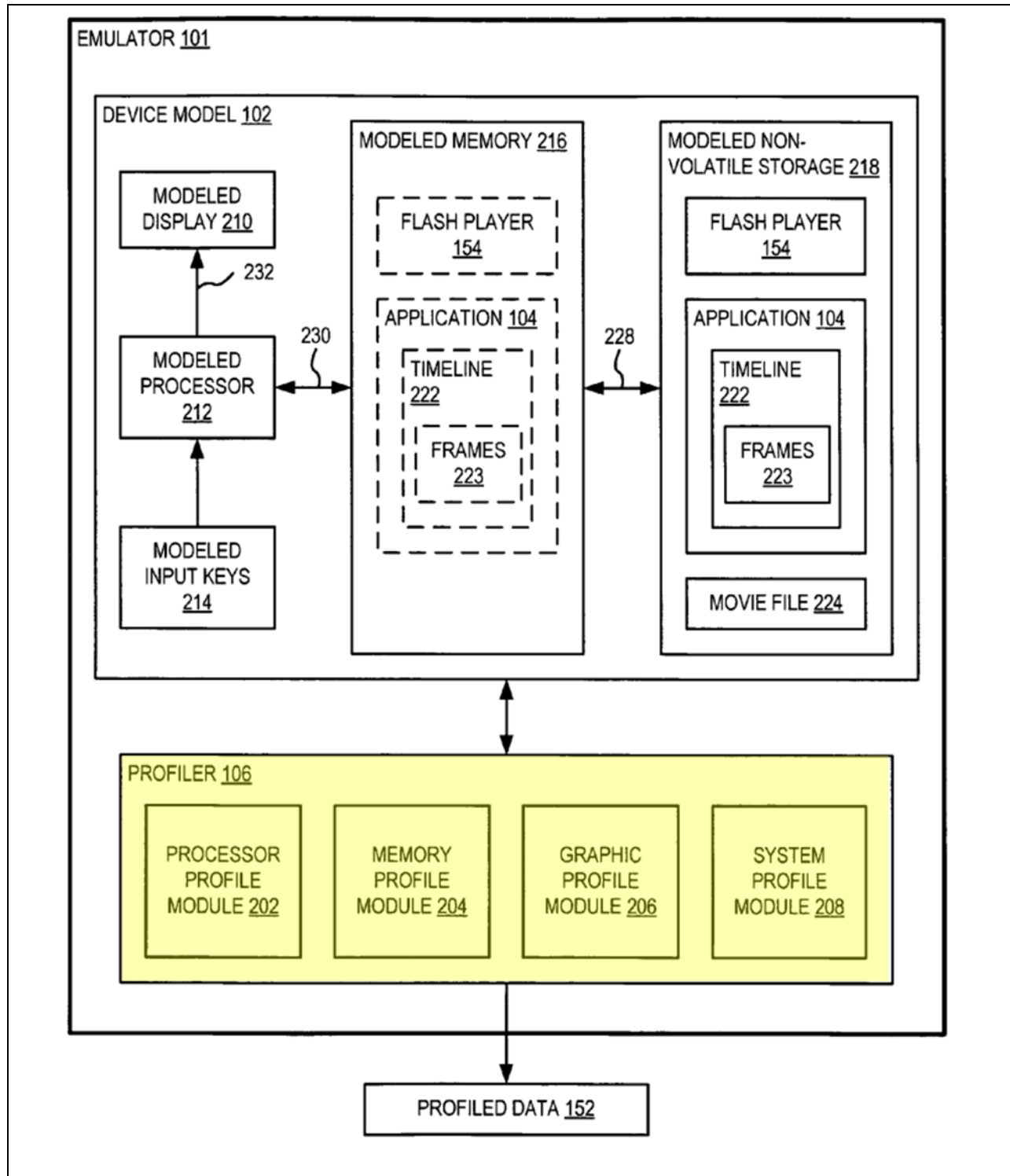
⁶⁸ See, e.g., *id.* at 3:19-53, 5:31-6:30, 6:51-7:22, 7:32-8:4, 8:1-4, 8:13-28, 9:40-53.

⁶⁹ *Id.* at 5:31-52, 6:45-50, 7:5-17.

⁷⁰ *Id.* at 3:32-37, 5:44-52, 6:66-7:22, 6:36-50.

⁷¹ *Id.* at 5:38-41.

⁷² *Id.* at Fig. 2.



99. “One or more profiler modules 202, 204, 206 and 208 within profiler 106 monitor resource utilization of each frame, storing results as profiled data 152. Profiled data 152 is then

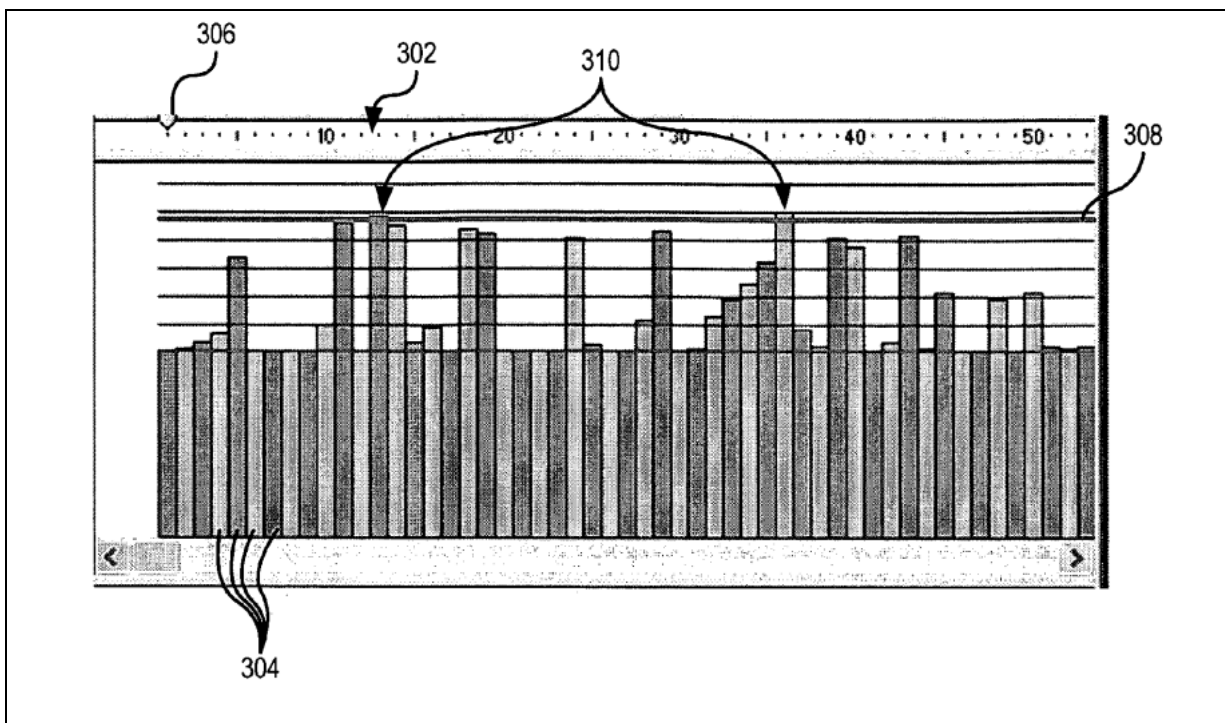
displayed as frame based profile data 110 on display 140 for review by the user. Profile data 152 may be displayed in real time as application 104 is played within model 102.”⁷³

100. “[P]rofiler 106, within emulator 101, is shown with a processor profile module 202, a memory profile module 204, a graphic profile module 206 and a system profile module 208. Processor profile module 202 may, for example, estimate processor utilization of application 104 within model 102. Memory profile module 204 may, for example, estimate memory utilization by application 104 within model 102. Graphic profile module 206 may, for example, estimate utilization of 3D fill rate and 3D polygon count of application 104 within model 102. System profile module 208 may, for example, determine overall system utilization of application 104 within model 102. More or fewer profile modules may be included within profiler 106.”⁷⁴ The profiled data that these profilers generate can be used to create displays that enable developers and testers to quickly identify where the resource utilization is occurring. Figure 3 shows an exemplary profile graph:⁷⁵

⁷³ *Id.* at 6:54-59.

⁷⁴ *Id.* at 5:54-67.

⁷⁵ *Id.* at Fig. 3, 2:58-59.



101. In '910 Patent Figure 3 (shown above) “Display 300 clearly displays processor resource utilization by frame 223 of application 104, thereby facilitating assimilation of stresses applied to mobile device 114 when playing application 104.”⁷⁶ “Where bars 304 rise above capacity line 308 at locations 310, resource utilization for indicated frames of application 104 exceed the available processor resources of mobile device 114; thus application 104 may capout or crash when playing those frames.”⁷⁷ The Patents-in-Suit further teach that it may be necessary to use multiple such displays at the same time for the various profiled resources to identify the areas of the mobile application code that need to be corrected.⁷⁸ Furthermore, the Patents-in-Suit teach producing these displays in real time as the application is running to better pinpoint which functionality is causing excessive resource usage.⁷⁹ These are not generic data and

⁷⁶ *Id.* at Fig. 3, 7:14-17.

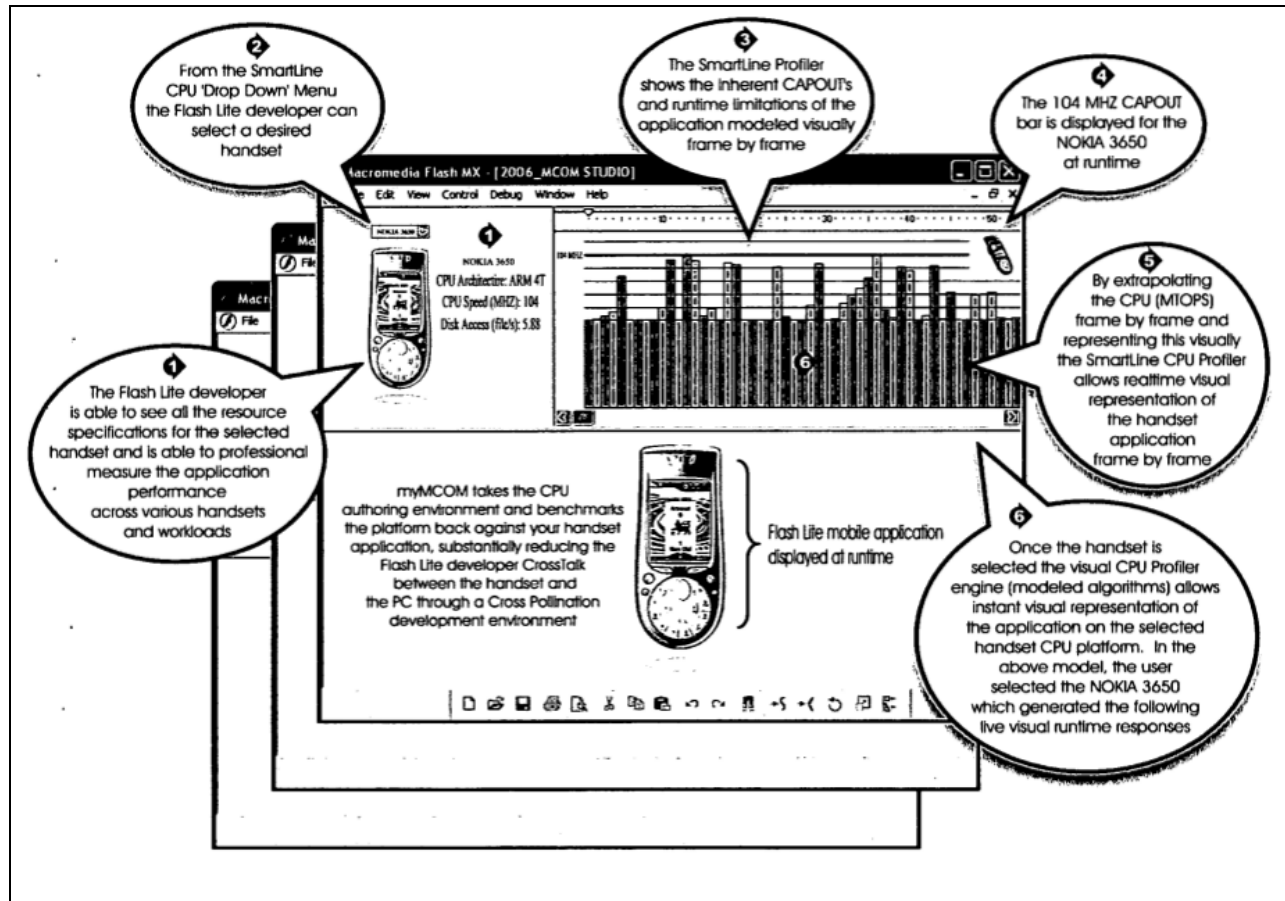
⁷⁷ *Id.* at 7:10-14.

⁷⁸ *Id.* at 5:41-52, 5:64-67, 6:20-30, 6:51-65, 8:18-23.

⁷⁹ *Id.* at 6:51-65.

displays, but rather a specific system of monitoring resources in the newly resource-constrained testing environment taught by the Patents-in-Suit, which includes a resource-constrained mobile device model and/or a resource-constrained network connection. This new type of testing is enabled by the teachings of the Patent-in-Suit and provides previously unavailable details about mobile device performance within resource-constrained simulations/emulations, including the utilization and availability of mobile device resources. The solutions help counter the resource limitations that are particular to mobile devices due to the constraints under which they operate (*e.g.*, limited energy availability, temperature management challenges, unstable network conditions, etc.). For example, mobile devices often have slower processors to conserve power due to battery constraints, and limited storage due to device-size constraints. The visual profilers of the Patents-in-Suit allow instant visual representation of the mobile application on the selected mobile device type (and its associated mobile device characteristics) to help mobile application developers and testers account for such limitations:⁸⁰

⁸⁰ '101 Provisional at WAPP-RJ-000447.

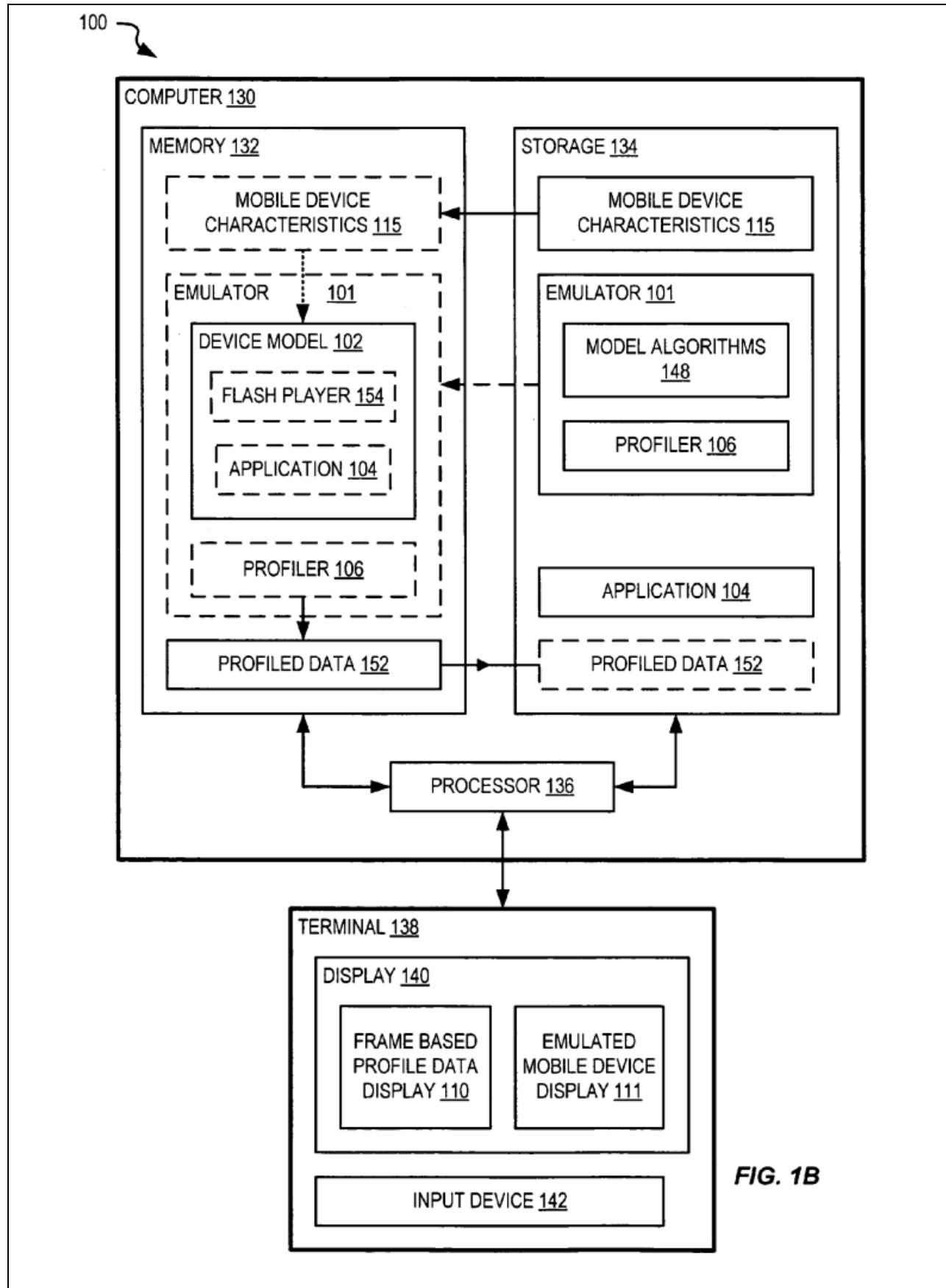


102. Additionally, the Patents-in-Suit teach corresponding the utilization of a specific displayed resource at a given time with one or more functions of the application responsible for that utilization, making it possible to quickly identify and correct the code responsible for the resource utilization.⁸¹ For example, in the context of Figure 1B, the Patents-in-Suit note that “Profiled data 152 may be stored (as shown in dashed outline) within storage 134 and/or displayed as frame based profile data 110 on display 140 of terminal 138. In particular, frame based profile data 110 may be used to identify areas within application 104 where upon playing of application 104 within mobile device 114, performance of mobile device 114 would be stressed. Thus, areas where failure may occur within application 104 may be

⁸¹ See, e.g., '910 Patent at Figs. 1A, 3, 5, 8, 9, 10, 11, 12, 2:18-24, 5:41-52, 6:31-50, 6:66-7:17, 8:34-40; '101 Provisional at WAPP-RJ-000447-448.

identified prior to running application 104 on mobile device 114. For example, emulator 101 may display all or part of profile data 152 on display 140 to facilitate development of application 104.”⁸²

⁸² '910 Patent at Fig. 1B, 5:41-52.



The Patented Inventions Provide Concrete Improvements to the Functioning of Mobile Application Development and Testing Software

103. These teachings of the Patents-in-Suit, including (1) emulation/simulation of specific mobile device types, (2) emulation/simulation of the specific networks mobile devices operate on, and (3) identifying what specific parts of the mobile application are performing poorly due to resource limitations through profiling in a simulated (resource-constrained) environment, providing multiple profile displays in realtime or in reports, and correlating the resource utilization to the parts of the application responsible for the resource usage—provide concrete improvements to the functioning of mobile application development and testing software. The resulting mobile device applications developed by that improved software tools perform better because they use fewer mobile device resources than applications not developed with such tools, and the mobile device itself also performs better because each mobile application is using fewer resources overall.

104. For example, in order to ensure that a new version of a mobile application will continue to work on older mobile phone models, a mobile application developer can emulate/simulate a specific device with less RAM, a slower processor, and slower storage access speed than might be found on newer mobile phones. Then, the developer could profile the application running on that emulation/simulation with limited resources to identify parts of the mobile application that would fail to function on the more limited mobile phone. If the new version of the mobile application crashed due to using more memory than older mobile phones had available, then the developer could use the improved tools to identify what specific part of the application caused the crash.

105. As a further example, the same developer could emulate/simulate a 3G network that an

older mobile phone might be likely to operate on. If the new version of the mobile application downloaded substantially more data than the old version during startup, then the developer would be able to identify that the application would load unacceptably slow on 3G connections by doing such a simulation, as well as identify what part of the application was causing the increased network utilization.

106. By using the patented inventions, mobile application developers can confirm that their mobile applications will not crash or perform unacceptably on specific devices and networks due to exceeding resource availability (*e.g.*, exceeding memory available to the application on devices with limited total memory, or network resources available to the application on devices connected to slower mobile networks).

The Patented Inventions Provide Particularized Solutions for Developing Reliable Mobile Applications

107. The Patents-in-Suit do not merely teach or claim improving mobile application development software or mobile application performance in the abstract. Instead, the Patents-in-Suit teach and claim particularized solutions for developing reliable mobile applications, which improves the performance of the mobile device (*i.e.*, a computing device).

108. For emulation/simulation of specific mobile device types, the Patents-in-Suit teach how to emulate/simulate specific types of mobile devices (rather than, *e.g.*, emulation/simulation of applications generally). For example, the Patents-in-Suit teach generating mobile device models based on specific mobile device characteristics, which are then used to determine if a mobile application will function correctly on the particular mobile device being emulated/simulated.⁸³

⁸³ '910 Patent at Figs. 1A-2, 4-12, 14, 2:1-17, 2:25-47, 3:19-6:19, 6:51-8:28, 8:41-10:7, 10:53-11:31, 11:45-12:65.

109. For emulation/simulation of the specific networks to which a mobile device may connect, the Patents-in-Suit teach how to emulate/simulate specific networks like those from various operators (rather than, *e.g.*, emulation/simulation of networks generally). For example, the Patents-in-Suit teach emulation/simulation of networks based on specific networks and their corresponding network characteristics (*e.g.*, bandwidth).⁸⁴
110. For identifying what specific areas of the mobile application are performing poorly due to resource limitations, the Patents-in-Suit teach specific solutions for using a profiler to monitor resource usage of the mobile application as it runs,⁸⁵ generating one or more graphical images of resource utilization based on the profile data,⁸⁶ and using the profile data to identify areas of the application responsible for the displayed resource utilization so that performance issues in the source code can be quickly identified and corrected.⁸⁷
111. These solutions, both alone and in combination, improve the functioning of mobile application development and testing software and result in the development of more reliable and efficient mobile applications. These particularized solutions are embodied in the claims of the Patents-in-Suit as discussed in more detail below.

The Solutions of the Patents-in-Suit are Not Conventional

112. The Solutions of the Patents-in-Suit as embodied in the claims were not conventional at the time of invention.
113. For example, emulation/simulation of specific mobile device types utilizing characteristics

⁸⁴ See, *e.g.*, '910 Patent at Figs. 7-13, 1:63-67, 3:1-13, 8:41-51, 8:56-12:58.

⁸⁵ See, *e.g.*, *id.* at Abstract, Figs. 1-2, 6, 8, 2:3-41, 2:51-57, 2:65-3:7, 3:19-37, 3:50-53, 4:10, 5:31-67, 6:14-30, 6:51-7:22, 7:39-8:40, 9:37-53, 11:37-41; '101 Provisional at WAPP-RJ-000445, WAPP-RJ-000447-448.

⁸⁶ See, *e.g.*, '910 Patent at Figs. 1-3, 5-6, 8-12, 2:51-54, 2:58-59, 2:62-67, 3:19-45, 5:38-52, 6:51-7:22, 7:32-44, 8:1-4, 9:40-53, 11:36-41; '101 Provisional at WAPP-RJ-000447-448.

⁸⁷ See, *e.g.*, '910 Patent at Figs. 1A, 3, 5-6, 8-12, 2:14-24, 3:19-37, 3:42-53, 5:35-52, 6:31-50; 6:53-7:22; 7:63-8:4, 8:18-40, 9:37-53.

of those mobile device types was not conventional. The Patents-in-Suit point this out, noting:⁸⁸

Development packages (e.g., FlashMX by Macromedia) are available to run on a PC and allow development of Flash Player applications for one or more mobile devices. However, although these development packages may simulate operation of the application playing on the targeted mobile device, they do not determine if the application will play correctly on the targeted mobile device based upon resource usage. Currently, the only way to determine if an application plays on a particular mobile device is to transfer the application to the device and play it. During development of an application for a mobile device, an application author may transfer and play the application hundreds of times (development life cycles) on the targeted mobile device before identifying and correcting all system resource problems within the application. Where an application is targeted to play on many types of mobile device, it must be transferred and tested on a mobile device representative of each targeted mobile device type. This transferring and testing process is time-consuming and therefore costly for the application author.

114. Thus, the Patents-in-Suit explain that prior solutions, such as Flash, could not sufficiently emulate hardware characteristics to show that a mobile application would work on a targeted mobile device type. Other prior art discussed by the Patents-in-Suit (such as Java/J2ME)⁸⁹ similarly failed to provide the kind of emulation/simulation of specific mobile device types necessary to test resource utilization on those specific device types.

115. As a further example, emulation/simulation of the specific networks that mobile devices operate on was not conventional. As the Patents-in-Suit note, at the time of invention it was “not possible” to “measure and emulate network characteristics within each market [for mobile devices].”⁹⁰ The Patents-in-Suit address emulation/simulation of the types of networks mobile devices would likely encounter using network characteristics in a manner that was non-conventional. Prior art such as Flash did not provide any emulation/simulation of mobile network characteristics, much less in a manner that was indicative of performance of the

⁸⁸ ’910 Patent at 1:44-67.

⁸⁹ See ’101 Provisional at WAPP-RJ-000446, -000448, -000451, -000453-456..

⁹⁰ ’910 Patent at 1:63-67.

mobile device when executing a mobile application. J2ME similarly failed to emulate/simulate network characteristics in a manner that was indicative of performance of a mobile device when executing a mobile application. Such prior approaches simply were not capable of emulating/simulating the type of networks and range and plurality of network characteristics that mobile devices were likely to encounter during real world use.

116. As another example, the specific solutions for identifying what specific parts of the mobile application were performing poorly due to resource limitations were not conventional at the time of invention. The art at the time did not include real time monitoring and display of multiple resources being used as the application was executed. Nor did the art include the ability to correspond the utilization of the displayed resources with the functions of the application responsible for the utilization. For example, Java/J2ME lacked the ability to correspond the utilization of the displayed resources with the functions of the application responsible for the utilization, and Flash/FlashLite lacked the ability to even monitor or correspond resource utilization generally. The novel approach of the Patents-in-Suit made it possible for developers and testers to quickly identify mobile application code that was using excessive resources and optimize that code before it caused issues for end users of the mobile application. In short, the Patents-in-Suit provided new “tools” to developers, enabling “measurements” that were previously impossible to obtain. Using these new measurements, application developers are able to develop more robust and reliable mobile applications, which enhances the performance of the underlying mobile device.

U.S. Patent No. 8,924,192

117. On Dec. 30, 2014, the United States Patent and Trademark Office (“USPTO”) duly and legally issued United States Patent No. 8,924,192 (“the ’192 Patent”) entitled “Systems

Including Network Simulation for Mobile Application Development and Online Marketplaces for Mobile Application Distribution, Revenue Sharing, Content Distribution, or Combinations thereof” on an application filed Nov. 9, 2012, United States Patent Application Ser. No. 13/673,692. The ’192 Patent is a continuation of United States Patent Application Ser. No. 12/759,543, filed Apr. 13, 2010, which is a continuation of United States Patent Application Ser. No. 11/449,958, filed Jun. 9, 2006, and issued as United States Pat. No. 7,813,910, on Oct. 12, 2012, which application claims priority to United States Patent Application Ser. No. 60/689,101 filed Jun. 10, 2005.

118. The ’192 Patent is presumed valid and enforceable.

119. Plaintiffs are the owners of the ’192 Patent.

120. The ’192 Patent includes all of the benefits and features of the patented invention as set forth above and describes systems that address technical problems related to authoring mobile applications and verifying their performance on a variety of devices and networks. *See, e.g.*, ’192 Patent at Fig. 7, 9:46-10:29, 14:19-23.

121. Technological improvements described and claimed in the ’192 Patent were not conventional, well-known, or routine at the time of their respective inventions but involved novel and non-obvious approaches to problems and shortcomings prevalent in the art at the time. *See, e.g.*, ’192 Patent at 1:23-2:8.

122. The written description of the ’192 Patent supports each of the elements of the claims, allowing a person of ordinary skill in the art (“POSITA”) to understand what the elements cover and how the non-conventional and non-routine combination of claim elements differed markedly from and improved upon what may have been considered conventional, generic, or routine. *See, e.g.*, ’192 Patent at Fig. 7, 9:46-10:29, 14:19-23.

123. The '192 Patent represents a substantial technical improvement in the area of authoring mobile applications, as demonstrated by its frequent citation. Plaintiffs' mobile authoring innovations have been cited against a number of industry-leading companies as prior art by the United States Patent and Trademark Office and the World Intellectual Property Organization, including citations against Google.⁹¹

124. The claims of the '192 Patent are directed to patentable subject matter. The claims are not directed to an abstract idea; instead, they recite concrete improvements to computer technologies, the claimed elements cannot be performed in the human mind, and each claim recites one or more inventive concepts. For example, '192 Patent claim 1 recites:

A system for developing an application for a mobile device comprising:

a software authoring interface configured to simultaneously visually emulate, via one or more profile display windows, a plurality of network characteristics indicative of performance of the mobile device when executing the application; wherein the software authoring interface is further configured to simulate a network connection state encountered by the mobile device.

125. As shown above, the claim recites a particularized system for developing an application for a mobile device, including an improved software authoring interface that is configured to simultaneously visually emulate, via one or more profile display windows, a plurality of network characteristics indicative of performance of the mobile device when executing the application.

126. This Court previously construed “simultaneously visually emulate, via one or more profile display windows” to mean “emulate simultaneously, and display one or more windows showing resources of the mobile device that are available to the application.”⁹² This Court also previously adopted the construction of “one or more profile display windows” to mean

⁹¹ See <https://patents.google.com/patent/US8924192B1/en> (accessed December 8, 2023).

⁹² *Wapp Tech. Ltd. v. Micro Focus Int'l PLC*, No. 4:18-cv-469, Dkt. No. 176 at 35 (E.D. Tex. April 27, 2020).

“one or more windows showing resources of the mobile device that are available to the application.”⁹³ The improved software authoring interface of ’192 Patent claim 1 is configured to emulate a plurality of network characteristics indicative of performance of the mobile device when executing the application and show one or more profile display windows that show resources of the mobile device that are available to the application. These elements (both alone and in combination) enhance the functionality of the system for developing an application and the software authoring interface, providing the benefits discussed previously. Those benefits overcome the shortcomings that existed at the time of the invention, as also discussed above.

127. For example, claim 1 recites emulation of “a plurality of network characteristics indicative of performance of the mobile device when executing the application.” These emulated network characteristics allow the mobile application developer to see how the mobile application will function when subjected to real world mobile network conditions (*e.g.*, by emulating reduced bandwidth or higher packet loss).

128. As another example, claim 1 also recites display of one or more “profile display windows” which profile resource usage of the application as it executes (in the emulated environment) and display resources of the mobile device that are available to the application (as set forth in the Court’s prior construction). These profile display windows are generated within the context of the network characteristics that are emulated. In addition, these profile display windows are used to identify what specific parts of the mobile application are performing poorly due to resource limitations (*e.g.*, due to the emulated network limitations like reduced bandwidth).

⁹³ *Wapp Tech Ltd. Partnership et al. v. JPMorgan Chase Bank, NA*, No. 4-23-cv-01137, Dkt. No. 80 at 7 (E.D. Tex. Nov. 19, 2024).

129. By combining both the network simulation and resource profiling/display elements, the invention as claimed provides even more of an improvement than the individual elements standing alone, drastically reducing the time it takes to identify and correct elements of a mobile application that would perform poorly on the types of network conditions that mobile devices are likely to encounter.

130. As another example, '192 Patent claim 60 recites:

A system comprising:

an application configured to enable a user to modify a photo on the mobile device, wherein the application is developed using a software authoring platform configured to simultaneously visually emulate, via one or more profile display windows, a plurality of hardware characteristics indicative of performance of the mobile device when executing the application.

131. As shown above, the claim recites a particularized system, including an application configured to enable a user to modify a photo on the mobile device. That application is developed using an improved software authoring platform that is configured to simultaneously visually emulate, via one or more profile display windows, a plurality of hardware characteristics indicative of performance of the mobile device when executing the application.

132. The improved software authoring platform of '192 claim 60 is configured to emulate a plurality of network characteristics indicative of performance of the mobile device when executing the application and show one or more profile display windows that show resources of the mobile device that are available to the application. These elements (both alone and in combination) enhance the functionality of the system and the software authoring platform, providing the benefits discussed previously.

133. For example, claim 60 recites emulation of “a plurality of hardware characteristics indicative of performance of the mobile device when executing the application.” These emulated hardware characteristics allow the mobile application developer to see how the

mobile application will function on a variety of mobile device types with different hardware characteristics (*e.g.*, by emulating different amounts of RAM for different devices). That would, for example, allow the developer to determine if the application under development is likely to perform poorly or crash on an older device with less RAM.

134. As another example, claim 60 also recites display of one or more “profile display windows” which profile resource usage of the application as it executes (in the emulated environment) and display resources of the mobile device that are available to the application. These profile display windows are generated within the context of the hardware characteristics that are emulated. In addition, these profile display windows are used to identify what specific parts of the mobile application are performing poorly due to resource limitations (*e.g.*, due to the emulated smaller amount of RAM available on certain mobile device types).

135. By combining both the mobile device emulation and resource profiling/display elements, the invention as claimed provides even more of an improvement than the individual elements standing alone, drastically reducing the time it takes to identify and correct parts of a mobile application that would perform poorly on certain mobile device types.

U.S. Patent No. 9,298,864

136. On March 29, 2016, the USPTO duly and legally issued United States Patent No. 9,298,864 (the “’864 Patent”) entitled “System Including Network Simulation for Mobile Application Development” on an application filed Nov. 19, 2013, United States Patent Application Ser. No. 14/084,321. The ’864 Patent is a divisional of United States Application Ser. No. 12/705,913, filed Feb. 15, 2010 (now United States Pat. No. 8,589,140), which claims priority to United States Application Ser. No. 61/152,934, filed Feb. 16, 2009, and is a continuation-in-part of United States Application Ser. No. 11/449,958, filed Jun. 9, 2006 (now

U.S. Pat. No. 7,813,910), which claims priority to United States Application Ser. No. 60/689,101, filed Jun. 10, 2005.

137. The '864 Patent is presumed valid and enforceable.

138. Plaintiffs are the owners of the '864 Patent.

139. The '864 Patent includes all of the benefits and features of the patented invention as set forth above and describes systems that address technical problems related to authoring mobile applications and verifying their performance on a variety of devices and networks. *See, e.g.*, '864 Patent at Fig. 7, 9:23-10:7, 13:66-14:3.

140. Technological improvements described and claimed in the '864 Patent were not conventional, well-known, or routine at the time of their respective inventions but involved novel and non-obvious approaches to problems and shortcomings prevalent in the art at the time. *See, e.g.*, '864 Patent at 1:18-2:7.

141. The written description of the '864 Patent supports each of the elements of the claims, allowing a POSITA to understand what the elements cover and how the non-conventional and non-routine combination of claim elements differed markedly from and improved upon what may have been considered conventional, generic, or routine. *See, e.g.*, '864 Patent at Fig. 7, 9:23-10:7, 13:66-14:3.

142. The '864 Patent represents a substantial technical improvement in the area of authoring mobile applications, as demonstrated by its frequent citation. Plaintiffs' mobile authoring innovations have been cited against a number of industry-leading companies as prior art by the United States Patent and Trademark Office and the World Intellectual Property Organization.⁹⁴

⁹⁴ *See* <https://patents.google.com/patent/US9298864B2/en> (accessed December 8, 2023).

143. The claims of the '864 Patent are directed to patentable subject matter. The claims are not directed to an abstract idea; instead, they recite concrete improvements to computer technologies, the claimed elements cannot be performed in the human mind, and each claim recites one or more inventive concepts. For example, '864 Patent claim 1 recites:

A system for testing an application for a mobile device comprising:

software configured to simulate, via one or more profile display windows, a plurality of network characteristics indicative of performance of the mobile device when executing the application; wherein the network characteristics are based on data of interaction with networks in non-simulated environments.

144. As shown above, the claim recites a particularized system for testing an application for a mobile device, including software configured to simulate, via one or more profile display windows, a plurality of network characteristics indicative of performance of the mobile device when executing the application. This Court previously construed “simulate, via one or more profile display windows” to mean “emulate, and display one or more windows showing resources of the mobile device that are available to the application.”⁹⁵ The improved system for testing an application of '864 Patent claim 1 is configured to simulate a plurality of network characteristics indicative of performance of the mobile device when executing the application and show one or more profile display windows that show resources of the mobile device that are available to the application. These elements (both alone and in combination) enhance the functionality of the system for testing an application for a mobile device, providing the benefits discussed previously. Those benefits overcome the shortcomings that existed at the time of the invention, as also discussed above.

145. For example, claim 1 recites simulation of “a plurality of network characteristics indicative of performance of the mobile device when executing the application,” and further

⁹⁵ *Wapp Tech. Ltd. v. Micro Focus Int'l PLC*, No. 4:18-cv-469, Dkt. No. 176 at 35 (E.D. Tex. April 27, 2020).

requires that “the network characteristics are based on data of interaction with networks in non-simulated environments.” These emulated network characteristics allow the mobile application developer to see how the mobile application will function when subjected to real world mobile network conditions (*e.g.*, by simulating reduced bandwidth or higher packet loss).

146. As another example, ’864 Patent claim 1 also recites display of one or more “profile display windows” which profile resource usage of the application as it executes (in the emulated environment) and display resources of the mobile device that are available to the application. These profile display windows are generated within the context of the network characteristics that are emulated. In addition, these profile display windows are used to identify what specific parts of the mobile application are performing poorly due to resource limitations (*e.g.*, due to the simulated network limitations like reduced bandwidth).

147. By combining both the network simulation and resource profiling/display elements, the invention as claimed provides even more of an improvement than the individual elements standing alone, drastically reducing the time it takes to identify and correct parts of a mobile application that would perform poorly on the types of network conditions that mobile devices are likely to encounter.

U.S. Patent No. 9,971,678

148. On May 15, 2018, the USPTO duly and legally issued United States Patent No. 9,971,678 (the “’678 Patent”) entitled “Systems Including Device and Network Simulation for Mobile Application Development” on an application filed Dec. 23, 2014, United States Patent Application Ser. No. 14/581,475. The ’678 Patent is a continuation of United States Patent Application Ser. No. 13/673,692, filed Nov. 9, 2012 and issued as United States Pat. No.

8,924,192, on Dec. 30, 2014, which is a continuation of United States Patent Application Ser. No. 12/759,543, filed April 13, 2010 and issued as United States Pat. No. 8,332,203, on Dec. 11, 2012, which is a continuation of United States Patent Application Ser. No. 11/449,958, filed Jun. 9, 2006 and issued as United States Pat. No. 7,813,910, on Oct. 12, 2010, which application claims priority to United States Patent Application Ser. No. 60/689,101 filed Jun. 10, 2005.

149. The '678 Patent is presumed valid and enforceable.

150. Plaintiffs are the owners of the '678 Patent.

151. The '678 Patent includes all of the benefits and features of the patented invention as set forth above and describes systems that address technical problems related to authoring mobile applications and verifying their performance on a variety of devices and networks. *See, e.g.*, '678 Patent at Fig. 7, 9:64-10:48, 14:4-9, 14:48-52.

152. Technological improvements described and claimed in the '678 Patent were not conventional, well-known, or routine at the time of their respective inventions but involved novel and non-obvious approaches to problems and shortcomings prevalent in the art at the time. *See, e.g.*, '678 Patent at 1:22-2:9.

153. The written description of the '678 Patent supports each of the elements of the claims, allowing a POSITA to understand what the elements cover and how the non-conventional and non-routine combination of claim elements differed markedly from and improved upon what may have been considered conventional, generic, or routine. *See, e.g.*, '678 Patent at Fig. 7, 9:64-10:48, 14:4-9, 14:48-52.

154. The '678 Patent represents a substantial technical improvement in the area of authoring mobile applications, as demonstrated by its frequent citation. Plaintiffs' mobile authoring

innovations have been cited against a number of industry-leading companies as prior art by the United States Patent and Trademark Office and the World Intellectual Property Organization, including citations against Amazon.⁹⁶

155. The claims of the '678 Patent are directed to patentable subject matter. The claims are not directed to an abstract idea; instead, they recite concrete improvements to computer technologies, the claimed elements cannot be performed in the human mind, and each claim recites one or more inventive concepts. For example, '678 Patent claim 1 recites:

A system for testing an application for a mobile device comprising:

a software testing interface configured to simultaneously visually simulate, via one or more profile display windows, a plurality of operator network characteristics including at least bandwidth availability indicative of performance of the mobile device when executing the application; wherein the bandwidth availability is based at least in part on bandwidth data predetermined from interactions between one or more mobile devices and at least one operator network.

156. As shown above, the claim recites a particularized system for testing an application for a mobile device, including an improved software testing interface configured to simultaneously visually simulate, via one or more profile display windows, a plurality of operator network characteristics including at least bandwidth availability indicative of performance of the mobile device when executing the application.

157. This Court previously construed “simultaneously visually simulate, via one or more profile display windows” to mean “emulate simultaneously, and display one or more windows showing resources of the mobile device that are available to the application.”⁹⁷ The improved software testing interface of '678 Patent claim 1 is configured to emulate a plurality of operator network characteristics including at least bandwidth availability indicative of

⁹⁶ See <https://patents.google.com/patent/US9971678/en> (accessed December 8, 2023).

⁹⁷ *Wapp Tech. Ltd. v. Micro Focus Int'l PLC*, No. 4:18-cv-469, Dkt. No. 176 at 35 (E.D. Tex. April 27, 2020).

performance of the mobile device when executing the application and display one or more profile display windows that show resources of the mobile device that are available to the application. These elements (both alone and in combination) enhance the functionality of the system for developing an application and the software authoring interface, providing the benefits discussed previously. Those benefits overcome the shortcomings that existed at the time of the invention, as also discussed above.

158. For example, claim 1 recites simulation of “a plurality of operator network characteristics including at least bandwidth availability indicative of performance of the mobile device when executing the application,” and further requires that “the bandwidth availability is based at least in part on bandwidth data predetermined from interactions between one or more mobile devices and at least one operator network.” These simulated network characteristics allow the mobile application developer to see how the mobile application will function when subjected to real world mobile network conditions (*e.g.*, by simulating reduced bandwidth or higher packet loss).

159. As another example, ’864 Patent claim 1 also recites display of one or more “profile display windows” which profile resource usage of the application as it executes (in the simulated environment) and display resources of the mobile device that are available to the application. These profile display windows are generated within the context of the network characteristics that are simulated. In addition, these profile display windows are used to identify what specific parts of the mobile application are performing poorly due to resource limitations (*e.g.*, due to the simulated network limitations like reduced bandwidth).

160. By combining both network simulation and resource profiling/display elements, the invention as claimed provides even more of an improvement than the individual elements

standing alone, drastically reducing the time it takes to identify and correct parts of a mobile application that would the perform poorly on the types of network conditions that mobile devices are likely to encounter.

U.S. Patent No. 10,353,811

161. On July 16, 2019, the USPTO duly and legally issued United States Patent No. 10,353,811 (“the ’811 Patent”) entitled “SYSTEM FOR DEVELOPING AND TESTING A MOBILE APPLICATION” on an application filed May 14, 2018, United States Patent Application Ser. No. 15/979,330. The ’811 Patent is a continuation of U.S. patent application Ser. No. 14/581,475, filed Dec. 23, 2014, which is a continuation of U.S. patent application Ser. No. 13/673,692, filed Nov. 9, 2012, and issued as U.S. Pat. No. 8,924,192, on Dec. 30, 2014, which is a continuation of U.S. patent application Ser. No. 12/759,543, filed Apr. 13, 2010, and issued as U.S. Pat. No. 8,332,203, on Dec. 11, 2012, which is a continuation of U.S. patent application Ser. No. 11/449,958, filed Jun. 9, 2006, and issued as U.S. Pat. No. 7,813,910, on Oct. 12, 2010, which application claims priority to U.S. Patent Application No. 60/689,101 filed Jun. 10, 2005.

162. The ’811 Patent is presumed valid and enforceable.

163. Plaintiffs are the owners of the ’811 Patent.

164. The ’811 Patent includes all of the benefits and features of the patented invention as set forth above and describes systems that address technical problems related to authoring mobile applications and verifying their performance on a variety of devices and networks. *See, e.g.*, ’811 Patent at Fig. 7, 9:63-10:48, 14:4-9, 14:48-52.

165. Technological improvements described and claimed in the ’811 Patent were not conventional, well-known, or routine at the time of their respective inventions but involved

novel and non-obvious approaches to problems and shortcomings prevalent in the art at the time. *See, e.g.*, '811 Patent at 1:23-2:11.

166. The written description of the '811 Patent supports each of the elements of the claims, allowing a POSITA to understand what the elements cover and how the non-conventional and non-routine combination of claim elements differed markedly from and improved upon what may have been considered conventional, generic, or routine. *See, e.g.*, '811 Patent at Fig. 7, 9:63-10:48, 14:4-9, 14:48-52.

167. The claims of the '811 Patent are directed to patentable subject matter. The claims are not directed to an abstract idea; instead, they recite concrete improvements specific to computer technologies, the claimed elements cannot be performed in the human mind, and each claim recites one or more inventive concepts. For example, '811 Patent Claim 1 recites:

A non-transitory, computer-readable medium comprising software instructions for developing an application to be run on a mobile device, wherein the software instructions, when executed, cause a computer to:

display a list of a plurality of mobile device models from which a user can select, wherein each model includes one or more characteristics indicative of a corresponding mobile device;

simulate at least one of the one or more characteristics indicative of the mobile device corresponding to the selected mobile device model;

simulate one or more characteristics indicative of a network on which the mobile device corresponding to the selected mobile device model can operate;

monitor utilization of a plurality of resources over time as the application is running;

display simultaneously two or more graphical images of the application's resource utilization, wherein each graphical image relates to a different resource;

correspond the utilization of a specific displayed resource at a given time with one or more functions of the application responsible for that utilization.

As shown above, the claim recites a particularized non-transitory, computer-readable

medium comprising software instructions for developing an application to be run on a mobile device, including the ability to display and select mobile device models wherein each model includes one or more characteristics indicative of a corresponding mobile device, simulate characteristics indicative of the mobile device corresponding to the selected mobile device model, simulate characteristics indicative of a network on which the mobile device corresponding to the selected mobile device model can operate, monitor utilization of a plurality of resources over time as the application is running and display graphical images of the utilization, and correspond the utilization of a specific displayed resource at a given time with one or more functions of the application responsible for that utilization. These elements (both alone and in combination) enhance the functionality of the computer-readable medium comprising software instructions for developing an application to be run on a mobile device, providing the benefits discussed previously. Those benefits overcome the shortcomings that existed at the time of the invention, as also discussed above.

168. For example, claim 1 recites “display[ing] a list of a plurality of mobile device models from which a user can select, wherein each model includes one or more characteristics indicative of a corresponding mobile device” and “simulat[ing] at least one of the one or more characteristics indicative of the mobile device corresponding to the selected mobile device model.” By providing users the capability to select from multiple different mobile device models and simulate specific characteristics that are indicative of how the physical versions of those mobile devices behave, the user can test (in a simulated environment) how the mobile application under development is likely to perform on that mobile device without having to procure and test on a physical version of every type of device.

169. As another example, claim 1 recites “simulat[ing] one or more characteristics indicative of

a network on which the mobile device corresponding to the selected mobile device model can operate.” These simulated network characteristics allow the mobile application developer to see how the mobile application will function when subjected to real world mobile network conditions (*e.g.*, by simulating reduced bandwidth or higher packet loss).

170. As another example, claim 1 recites “monitor[ing] utilization of a plurality of resources over time as the application is running,” “display[ing] simultaneously two or more graphical images of the application’s resource utilization, wherein each graphical image relates to a different resource,” and “correspond[ing] the utilization of a specific displayed resource at a given time with one or more functions of the application responsible for that utilization.” By monitoring a plurality of resources over time as the application is running while at the same time displaying multiple graphical images of the utilization of various resources, the user can identify what specific parts of the mobile application are performing poorly due to resource limitations (*e.g.*, due to the simulated network limitations like reduced bandwidth or due to a slower processor on the selected mobile device model). Furthermore, because the claimed software instructions “correspond the utilization of a specific displayed resource at a given time with one or more functions of the application responsible for that utilization” the user can quickly and efficiently identify the source code responsible for the displayed resource utilization.

171. By combining the network simulation, mobile device simulation, and resource monitor/profiling/display/corresponding elements, the invention as claimed provides even more of an improvement than the individual elements standing alone, drastically reducing the time it takes to identify and correct parts of a mobile application that would perform poorly (1) on the types of network conditions that mobile devices are likely to encounter, and (2) on

specific mobile device types.

U.S. Patent No. 10,691,579

172. On June 23, 2020, the USPTO duly and legally issued United States Patent No. 10,691,579 (“the ’579 Patent”) entitled “SYSTEMS INCLUDING DEVICE AND NETWORK SIMULATION FOR MOBILE APPLICATION DEVELOPMENT” on an application filed March 28, 2016, United States Patent Application Ser. No. 15/083,186. The ’579 Patent is a division of U.S. application Ser. No. 14/084,321, filed Nov. 19, 2013 (now U.S. Pat. No. 9,298,864), which claims priority to U.S. application Ser. No. 12/705,913, filed Feb. 15, 2010 (now U.S. Pat. No. 8,589,140), which claims priority to U.S. Application No. 61/152,934, filed Feb. 16, 2009, and is a continuation-in-part of U.S. application Ser. No. 11/449,958, filed Jun. 9, 2006 (now U.S. Pat. No. 7,813,910), which claims priority to U.S. Application No. 60/689,101, filed Jun. 10, 2005.
173. The ’579 Patent is presumed valid and enforceable.
174. Plaintiffs are the owners of the ’579 Patent.
175. The ’579 Patent includes all of the benefits and features of the patented invention as set forth above and describes systems that address technical problems related to authoring mobile applications and verifying their performance on a variety of devices and networks. *See, e.g.*, ’579 Patent at Fig. 7, 9:42-10:26, 13:48-53, 14:25-29.
176. Technological improvements described and claimed in the ’579 Patent were not conventional, well-known, or routine at the time of their respective inventions but involved novel and non-obvious approaches to problems and shortcomings prevalent in the art at the time. *See, e.g.*, ’579 Patent at 1:20-2:11.

177. The written description of the '579 Patent supports each of the elements of the claims, allowing a POSITA to understand what the elements cover and how the non-conventional and non-routine combination of claim elements differed markedly from and improved upon what may have been considered conventional, generic, or routine. *See, e.g.*, '579 Patent at Fig. 7, 9:42-10:26, 13:48-53, 14:25-29.

178. The claims of the '579 Patent are directed to patentable subject matter. The claims are not directed to an abstract idea; instead, they recite concrete improvements specific to computer technologies, the claimed elements cannot be performed in the human mind, and each claim recites one or more inventive concepts. For example, '579 Patent claim 15 recites:

A non-transitory, computer-readable medium comprising software instructions for developing an application to be run on a mobile device, wherein the software instructions, when executed, cause a computer to:

select one or more characteristics associated with a mobile device;

monitor utilization of one or more resources of the mobile device over time by an application running on a simulation of the mobile device;

display a representation of one or more of the monitored resource;

correspond the utilization of a specific displayed resource at a given time with one or more functions, or code, or both of the application responsible for that utilization;

initiate transmission of the application on a simulation of the mobile device, or to the physical mobile device, or both.

179. As shown above, the claim recites a particularized non-transitory, computer-readable medium comprising software instructions for developing an application to be run on a mobile device including the ability to select one or more characteristics associated with a mobile device, monitor utilization of one or more resources of the mobile device over time by an application running on a simulation of the mobile device, display a representation of one or more of the monitored resource, correspond the utilization of a specific displayed resource at a

given time with one or more functions, or code, or both of the application responsible for that utilization, and initiate transmission of the application on a simulation of the mobile device, or to the physical mobile device, or both. These elements (both alone and in combination) enhance the functionality of the computer-readable medium comprising software instructions for developing an application to be run on a mobile device, providing the benefits discussed previously. Those benefits overcome the shortcomings that existed at the time of the invention, as also discussed above.

180. For example, claim 15 recites “select[ing] one or more characteristics associated with a mobile device,” “monitor[ing] utilization of one or more resources of the mobile device over time by an application running on a simulation of the mobile device” and “initiat[ing] transmission of the application on a simulation of the mobile device, or to the physical mobile device, or both” (emphases added). By providing the user the ability to select characteristics associated with a mobile device, transmit the application to a simulation of the mobile device with those characteristics, and run the application on a simulation of the mobile device, the user can quickly test (in a simulated environment) how the mobile application under development is likely to perform on a mobile device with the selected characteristics.

181. As another example, claim 15 recites “monitor[ing] utilization of one or more resources of the mobile device over time by an application running on a simulation of the mobile device,” “display[ing] a representation of one or more of the monitored resource,” and “correspond[ing] the utilization of a specific displayed resource at a given time with one or more functions, or code, or both of the application responsible for that utilization.” By monitoring resources over time as the application is running while at the same time displaying representations of the utilization of various resources, the user can identify what specific parts

of the mobile application are performing poorly due to resource limitations (*e.g.*, due to the simulated limitations like a slower processor on the selected mobile device model). Furthermore, because the claimed software instructions “correspond the utilization of a specific displayed resource at a given time with one or more functions, or code, or both of the application responsible for that utilization” the user can quickly and efficiently identify the source code responsible for the displayed resource utilization.

182. By combining the mobile device simulation and resource monitor/profiling/display/corresponding elements, the invention as claimed provides even more of an improvement than the individual elements standing alone, drastically reducing the time it takes to identify and correct parts of a mobile application that would perform poorly on specific mobile device types.

WAPP’s Prior Enforcement of the Patents-in-Suit

183. Over a period of seven years, the Patents-in-Suit have been asserted in numerous lawsuits, and have faced validity challenges (including Section 101 challenges) in each of them. All prior defendants have recognized the weakness of those validity challenges and ultimately chosen to settle at various stages in the litigations when they realized their defenses would fail.

184. On July 2, 2018, Wapp filed a patent infringement lawsuit against Micro Focus International PLC (the “Micro Focus Suit”).⁹⁸ The asserted patents in the Micro Focus Suit included the ’192 Patent, ’864 Patent, and ’678 Patent. The jury trial in the Micro Focus Suit began on March 1, 2021.⁹⁹ By the final day of trial, the defendant was forced to concede on nearly all of its validity challenges (and its remaining challenges were dismissed as a matter of

⁹⁸ *Wapp Tech. Ltd. v. Micro Focus Int’l PLC*, No. 4:18-cv-469-ALM, Dkt. No. 1 (E.D. Tex., July 2, 2018).

⁹⁹ *Id.* at Dkt. 486 at 1.

law).¹⁰⁰ At the conclusion of that trial, the jury awarded Wapp \$172,554,269.00, which was 100% of Wapp's requested damages; the Court subsequently entered final judgment in favor of Wapp, confirming the jury's damages award, and granting Wapp's motion for judgment as a matter of law regarding validity.¹⁰¹ The Micro Focus Suit ultimately settled for \$67.5 million.

185. In parallel with the Micro Focus Suit, Wapp also filed lawsuits against Bank of America¹⁰² on July 20, 2018 and Wells Fargo¹⁰³ on July 16, 2018 based on Wells Fargo's and Bank of America's infringing use of Micro Focus' Loadrunner software. Those lawsuits were subsequently stayed pursuant to a stipulation that Wells Fargo and Bank of America "hereby agree[] to be bound by any final judgment in the [Micro Focus] Suit as to both infringement and invalidity."¹⁰⁴

186. On August 27, 2021, Wapp again filed suit against Wells Fargo (the "Wells Fargo Suit"), this time based on Wells Fargo's infringing use of software development tools including Apple's Xcode and Google's Android Studio.¹⁰⁵ The case proceeded to discovery and a claim construction hearing and order in which the Court construed four disputed terms, giving three of those terms their plain meanings and finding one indefinite.¹⁰⁶ On September 2, 2022, Wapp issued a subpoena to Apple in connection with the Wells Fargo Suit. The subpoena

¹⁰⁰ *Wapp Tech. Ltd. v. Micro Focus Int'l PLC*, No. 4:18-cv-469-ALM, Dkt. No. 478 at 1271:15-1274:16, 1275:18-1276:2, 1280:22-1282:23 (E.D. Tex., March 5, 2021).

¹⁰¹ *Id.* at Dkt. 486 at 2; *id.* at Dkt. 487 at 1.

¹⁰² *Wapp Tech. Ltd. v. Bank of America Corp.*, No. 4:18-cv-519-ALM, Dkt. No. 1 (E.D. Tex., July 20, 2018).

¹⁰³ *Wapp Tech. Ltd. v. Wells Fargo & Co.*, No. 4:18-cv-501-ALM, Dkt. No. 1 (E.D. Tex., July 16, 2018).

¹⁰⁴ *Id.* at Dkt. 137 at 8.

¹⁰⁵ *Wapp Tech. Ltd. v. Wells Fargo Bank, N.A.*, No. 4:21-cv-00671-ALM, Dkt. No. 1 (E.D. Tex., August 27, 2021).

¹⁰⁶ *Id.* at Dkt. 96.

identified the pending lawsuit and relevant versions of Xcode and informed Apple about Wapp's infringement allegations. Wapp and Wells Fargo entered into a settlement in the fall of 2022.

187. On August 27, 2021, Wapp again filed suit against Bank of America (the "BoA Suit"), this time based on Bank of America's infringing use of software development tools including Apple's Xcode and Google's Android Studio.¹⁰⁷ The case proceeded to discovery and a claim construction hearing and order in which the Court construed four disputed terms, giving three of those terms their plain meanings and finding one indefinite.¹⁰⁸ On September 2, 2022, Wapp issued a subpoena to Apple in connection with the BoA Suit. The subpoena identified the pending lawsuit and relevant versions of Xcode and informed Apple about Wapp's infringement allegations. Wapp and Bank of America entered into a settlement in late 2022.

188. On December 22, 2023 filed suit against JPMorgan Chase (the "Chase Suit") based on Chase's infringing use of software development tools including Apple's Xcode and Google's Android Studio.¹⁰⁹ The case proceeded to discovery and a claim construction hearing and order in which the Court construed nine disputed terms, resolving all nine claim construction disputes in Wapp's favor.¹¹⁰ On July 23, 2024, Wapp issued a subpoena to Apple in connection with the Chase Suit. The subpoena identified the pending lawsuit and relevant versions of Xcode and informed Apple about Wapp's infringement allegations. Wapp and Chase filed a notice of a settlement in principle in late 2024.

¹⁰⁷ *Wapp Tech. Ltd. v. Bank of America N.A.*, No. 4:21-cv-00670-ALM, Dkt. No. 1 (E.D. Tex., August 27, 2021).

¹⁰⁸ *Id.* at Dkt. 110.

¹⁰⁹ *Wapp Tech. Ltd. v. Bank of America N.A.*, No. 4:23-cv-01137-ALM, Dkt. No. 1 (E.D. Tex., December 22, 2023).

¹¹⁰ *Id.* at Dkt. 80.

Infringement by Defendants

Apple

189. Apple derives a large portion of its revenue from sales of iOS devices, applications, and services.¹¹¹ Apple's Xcode Development Tools are used to develop the iOS applications that run on iOS devices (such as iPhones and iPads).¹¹² Those Xcode Development Tools are used by both Apple and third-party software developers to develop applications installed on iOS devices and distributed through the Apple App Store. Upon information and belief, Apple also has developed proprietary in-house development tools that it uses alone or in conjunction with Xcode to test mobile applications to ensure they are reliable and meet Apple's standards.

190. Apple has acknowledged that "[t]he Company's future performance depends in part on support from third-party software developers" because "decisions by customers to purchase its hardware products depend in part on the availability of third-party software applications and services."¹¹³ Those third-party software applications and services are developed using Xcode Development Tools. Thus, the availability of the Xcode Development Tools practicing the claimed inventions is critical to the success of Apple's mobile devices and software.

191. Apple makes the Xcode Development Tools.¹¹⁴ Apple sells, offers for sale, and distributes the Xcode Development Tools in multiple ways, including through its App Store and its website.¹¹⁵ Apple customers—such as Apple's co-Defendants (discussed below)—use the Xcode Development Tools in an infringing manner to develop mobile applications for distribution in the Apple App Store. On information and belief, Apple uses the Xcode

¹¹¹ See, e.g., Apple's 2024 Form 10-k at 35, <https://d18rn0p25nwr6d.cloudfront.net/CIK-0000320193/c87043b9-5d89-4717-9f49-c4f9663d0061.pdf> (accessed March 3, 2025).

¹¹² <https://developer.apple.com/xcode/> (accessed March 3, 2025) ("Xcode enables you to develop, test, and distribute apps for all Apple platforms.").

¹¹³ Apple's 2024 Form 10-k at 10.

¹¹⁴ See, e.g., <https://developer.apple.com/xcode/> (accessed March 3, 2025)

¹¹⁵ See, e.g., <https://apps.apple.com/us/app/xcode/id497799835?mt=12> (accessed March 3, 2025)

Development Tools in an infringing manner to develop its own mobile applications.¹¹⁶

192. Apple has made, used, offered for sale and sold Xcode Development Tools continuously for at least the six-year period preceding the original complaint.

193. Apple further directly infringes by making, using, selling, offering for sale, and/or importing infringing mobile devices (such as iPhones) that come with the Photos app installed. An iPhone with the Photos app installed infringes at least '192 Patent Claim 60 because it constitutes a “system comprising an application configured to enable a user to modify a photo on a mobile device”¹¹⁷ and because the Photos app was developed using “a software authoring platform configured to simultaneously visually emulate, via one or more profile display windows, a plurality of hardware characteristics indicative of performance of the mobile device when executing the application.”

194. Apple also indirectly infringes by actively inducing others, including Apple's co-Defendants, to directly infringe the Patents-in-Suit by using Xcode in an infringing manner. Apple has induced, caused, urged, encouraged, aided and abetted its direct and indirect customers to infringe the Patents-in-suit. Apple has done so by acts including but not limited to selling Xcode to its customers; marketing Xcode; and providing instructions, technical support, and other support and encouragement (available via <https://developer.apple.com/documentation/xcode/>, for instance) for the infringing use of Xcode. For example, Apple maintains web pages where it specifically instructs its customers how to use Xcode in an infringing manner.¹¹⁸ Such conduct by Defendant Apple was intended

¹¹⁶ See <https://apps.apple.com/bj/developer/apple/id284417353?mt=12> (accessed March 3, 2025).

¹¹⁷ See, e.g., <https://support.apple.com/guide/iphone/edit-photos-and-videos-iphb08064d57/18.0/ios/18.0> (“After you take a photo or video, use the tools in the Photos app to edit it on your iPhone.”)

¹¹⁸ See, e.g., <https://developer.apple.com/documentation/xcode/>;

to and actually resulted in direct infringement, including the making, using, selling, offering for sale, and/or importation of Xcode and/or infringing mobile applications in the United States by Apple's customers (including Apple's co-Defendants).

Capital One and Frost

195. Capital One also offers multiple mobile applications that it distributes through Apple's App Store¹¹⁹ and Google's Google Play Store.¹²⁰ As an example, Capital One's "Capital One Mobile" application has over 1.6M reviews and 10M+ downloads in the Google Play Store,¹²¹ and more than 9M reviews in the Apple App Store.¹²² On information and belief, the Capital One Mobile application was the most downloaded banking application in 2023.¹²³

196. Frost also offers multiple mobile applications that it distributes through Apple's App Store¹²⁴ and Google's Google Play Store.¹²⁵ As an example, Frost's "Frost" application has over 11.8K reviews and 100K+ downloads in the Google Play Store, and more than 57.1K reviews in the Apple App Store.

197. On information and belief, Defendants Capital One and Frost use Apple's Xcode on an ongoing basis to author their respective mobile applications for Apple's App Store. On information and belief, Defendants Capital One and Frost use Google's Android Studio on an ongoing basis to author their respective mobile applications for Google's App Store.

<https://developer.apple.com/library/archive/navigation/>

¹¹⁹ <https://apps.apple.com/us/developer/capital-one/id339644101> (accessed March 3, 2025).

¹²⁰ <https://play.google.com/store/apps/developer?id=Capital+One+Services,+LLC> (accessed March 3, 2025).

¹²¹ https://play.google.com/store/apps/details?id=com.konylabs.capitalone&hl=en_US (accessed March 3, 2025).

¹²² <https://apps.apple.com/us/app/capital-one-mobile/id407558537> (accessed March 3, 2025).

¹²³ <https://www.statista.com/statistics/1381325/us-leading-banking-apps-by-downloads/> (accessed on July 18, 2024)

¹²⁴ <https://apps.apple.com/us/app/frost-bank/id605494138>

¹²⁵ <https://play.google.com/store/apps/details?id=com.frostbank.android>

Defendants Capital One and Frost use both Xcode and Android Studio in a manner that infringes the Patents-in-Suit when they use them to author mobile applications. In addition, on information and belief, Defendants Capital One and Frost use other software tools to develop their mobile applications, and on information and belief, they potentially use those other tools in an infringing manner.

198. Defendants Capital One's and Frost's use of Xcode and Android Studio in an infringing manner is necessary to meet the performance and functionality guidelines identified by Apple and Google for admission to their respective app stores.¹²⁶ Defendants Capital One's and Frost's infringing use of Xcode and Android Studio is necessary to provide their large mobile application demographics with a satisfactory mobile application.

199. Defendants Capital One and Frost employ engineers and computer scientists who author and verify performance of mobile applications for them on an ongoing basis.

200. On information and belief, Defendants Capital One and Frost have continuously used Xcode and Android Studio in an infringing manner to create their respective mobile applications for at least the six-year period preceding the original complaint.

201. In addition, as set forth above and below, Defendants Capital One and Frost infringe '192 claim 60 by virtue of their applications' functionality concerning photo modification and because the apps were developed using "a software authoring platform configured to simultaneously visually emulate, via one or more profile display windows, a plurality of hardware characteristics indicative of performance of the mobile device when executing the application."

¹²⁶ <https://developer.apple.com/app-store/review/guidelines/> (accessed December 8, 2023); <https://play.google.com/console/about/guides/releasewithconfidence/> (accessed December 8, 2023).

Apple Patent Application No. 12/969,494

202. On December 15, 2010, Apple filed patent application no. 12/969,494 titled “Mobile Hardware and Network Environment Simulation.” This application (filed years after Wapp’s provisional and initial non-provisional patent applications) is largely about network simulation, as the title suggests. The Apple patent application was eventually allowed on December 10, 2013 and issued as U.S. Patent No. 8,605,613 B2. The patent discloses technology that allows a user to test mobile content in simulated mobile network environments. According to the abstract, “The present technology provides an ability to simulate the performance of mobile content in a more realistic testing environment than previously available. Specifically, the present technology can mimic the fluctuations in network states that mobile devices typically experience.” *Id.* at Abstract.

203. Throughout the patent application, prosecution history, and within the published patent, Apple claims both implicitly and explicitly that mobile network simulation is subject matter that is eligible for patent protection. For example, the original claims filed with the patent application read:

1. A system comprising:

an authoring module configured to author mobile content configured for wireless transmission to a mobile device over multiple connection states; and

a testing module simulating the connection states for testing the performance of the mobile content.

2. The system of claim 1, further comprising:

a testing configuration interface module configured to accept user inputs selecting available simulated connected states, which are simulated by the testing module.

3. The system of claim 1, further comprising:

a performance monitoring module configured to monitor the performance of

the mobile content with the simulated connection states provided by the testing module.

4. The system of claim 3, further comprising:

a reporting module configured to report performance statistics obtained by the performance monitoring module.

5. The system of claim 4, further comprising:

an optimization module configured to analyze the statistics reported by the reporting module and based on the analysis recommend optimizations of the mobile content.

6. The system of claim 1, wherein the multiple connection states comprise simulating a connection that begins in a first connection state and switches to a second connection state during the simulation for testing the performance of the mobile content.

7. A computer-implemented method comprising:

simulating a network connection state encountered by a mobile computing device;

testing an operation of an item of content under conditions associated with the simulated network connection state; and

observing a performance of the operation of the item of content under the conditions associated with the simulated network connection state.

U.S. Patent Application 12/969,494 at 33-34.

204. During the prosecution of the ‘613 patent, the examiner rejected claims 1-6 under § 101 for being directed to non-statutory subject matter. U.S. Patent Application 12/969,494 Non-Final Rejection 4-7 (Feb. 1, 2013). Additionally, the patent examiner rejected all 29 claims under § 102 and § 103 as being anticipated by Wapp’s patent 8,332,203 (which is in the same family of Wapp’s asserted patents) or rendered obvious by a combination of the ‘203 patent and other prior art. *Id.* at 7-30.

205. Apple filed a response to the Office Action on May 1, 2013. Apple’s remarks in response to the office action included a section on “Rejections under 35 U.S.C. § 101”:

Claims 1-6 stand rejected under 35 U.S.C. §101 as allegedly being directed to nonstatutory subject matter. In response, Applicants are amending independent claims 1-6 and submit that the amendments cure the deficiencies pointed out by the Examiner. In particular, Applicants point out that amended claim 1 now recites the limitations of “**simulating wireless transmission of mobile content to a mobile device based on a connection simulation selected by a user,**” which clearly requires the system of claim 1 to be implemented and cannot be carried out mentally or verbally. Therefore, Applicants respectfully request that the §101 rejections against claims 1-6 be withdrawn.

Id. at 7 (emphasis added).

206. Following the office action response, claims 1-6 issued, as amended:

1. A system, comprising:

an authoring module that enables a user to author mobile content configured for wireless transmission to a mobile device; and

a testing module for testing how well the mobile content performs on the mobile device, wherein the testing module is configured to:

enable the user to **select from a list of connection simulations**, wherein each **connection simulation** is based on different connection statistics reported by other mobile devices used in non-simulated environments;

receive a selection of a connection simulation to simulate; and

simulate wireless transmission of the mobile content to the mobile device based on the **selected connection simulation**.

2. The system of claim 1, further comprising a testing configuration interface module configured to accept user inputs that **select available simulated connected states that are simulated** by the testing module.

3. The system of claim 1, further comprising a **performance monitoring** module configured to **monitor the performance** of the mobile content with the **simulated connection states** provided by the testing module.

4. The system of claim 3, further comprising a **reporting** module configured to **report performance statistics** obtained by the **performance monitoring** module.

5. The system of claim 4, further comprising an optimization module configured to analyze the statistics reported by the **reporting** module and based on the analysis recommend optimizations of the mobile content.

6. The system of claim 1, wherein the **simulating involves simulating a**

connection that begins in a first connection state and switches to a second connection state during the **simulation** for testing the performance of the mobile content.

U.S. Patent No. 8,605,613 B2 at 16:48-67, 17:1-16 (emphasis added).

207. Claim 7 also issued as follows:

7. A computer-implemented method, comprising:

simulating a network connection state encountered by a mobile computing device;

testing an operation of an item of content under conditions associated with the **simulated network connection state**; and

observing a performance of the operation of the item of content on the mobile device under the conditions associated with the **simulated network connection state**, wherein the **simulated network connection state** is selected from a list of **connection simulations** and each **connection simulation** is based on different connection statistics reported by other mobile devices used in non-simulated environments.

Id. at 17:17-30 (emphasis added).

208. As shown, Apple expressly stated in the office action response that a form of network simulation is eligible subject matter for patents. In addition, as shown in the issued patent, the claims repeatedly mention certain concepts relating to network simulation and monitoring/reporting that Apple believes are eligible subject matter, as bolded above. The PTO ultimately agreed with Apple and found Apple's claims to be directed to patentable subject matter, determining that the claims should be allowed. This decision was based on factual findings the PTO made. Wapp hereby alleges that the PTO's fact finding concerning the subject matter eligibility of Apple's claims was correct and incorporates those facts by reference. The same legal and factual bases that supported the PTO's finding that Apple's claims were patent eligible are also applicable to the claims of Wapp's asserted patents and require that Wapp's claims also must be found eligible. To the extent a party alleges the

claims of Wapp's asserted patents are not eligible under § 101, that party necessarily disputes the PTO's factfinding, which must be taken as true for purposes of this Amended Complaint.

209. Furthermore, in their patent, Apple repeatedly claims that this technology is important and addresses a need in the industry to be able to test mobile applications in simulated network conditions to ensure smooth functionality across multiple mobile devices:

The authoring of electronic content has become a robust industry. With the continued rise and expansion of this industry, competition for projects also increases, which makes the delivery of high quality and well-performing content increasingly important.

At the same time, the environments in which the content is to be delivered and displayed becomes more varied. Rather than one or two operating systems running on devices with mostly similar performance capabilities, **we now have a greater variety of device types with varying capabilities**, and several different operating environments. Further complicating the operating environment landscape is that **devices access content over diverse connection states**. In many cases, a given device might be capable of operation over multiple connection states, such as a Local Area Network (LAN) or mobile network. Such variability makes it much harder for content authors to produce high quality and well-performing content.

U.S. Patent No. 8,605,613 B2 at 1:12-30 (emphasis added).

The present disclosure addresses the need in the art to test electronic content intended for display on a mobile device, such as a smartphone, tablet, personal multi-media playing device, etc. by **simulating conditions that are similar to the conditions in which a mobile device commonly operates**. As the name implies, a mobile device is portable, and it is often used while a user is on the move. As such, mobile devices are known to experience a fair degree of variation in network conditions as the device moves along with the user.

Id. at 3:33-41 (emphasis added).

Having a complete application is only one step in successfully publishing electronic content and presenting it to users. As addressed above, today's devices come in many different sizes and have different display and processing capabilities. Accordingly, content often needs to be configured or optimized for different devices. Such a step requires knowledge of the **capabilities of each device**. Additionally, different users connect to the Internet in various ways and sometimes multiple ways, even in the same usage session. Accordingly, getting content to users requires taking into account the **variance in the different network technologies** too. Even if a content developer did understand the varying capabilities of the different **device and network connections**, and

further knew the different specifications required to optimize content for delivery and presentation on a content consumer's device, creating optimized packages of each application would be a time consuming process.

Id. at 6:45-55 (emphasis added).

Just like with any other application, the creation, packing, and compression of quality mobile content requires sufficient quality assurance testing in the native environment. While an author of authoring tool will make his/her best effort to generate quality content on the first try, it is extraordinarily difficult to predict how the mobile content should be packaged (as indicated by the manifest file) to account for the mobile content's actual usage patterns and the unpredictability of content delivery over mobile networks. However, with mobile devices, the native environment can be very dynamic. Accordingly, the present technology provides a system and method for **testing the application in conditions that simulate conditions in which a mobile device might operate.**

Id. at 8:41-54 (emphasis added).

As addressed above, testing and previewing the authored application can be an extremely important step, especially for those that are using the authoring tool professionally. Accordingly, the authoring tools **testing simulations include the ability to test in many different network states** as well, so as to simulate the real world operation of the application. In some embodiments, the authoring tool can simulate a fast connection becoming slow, so that the content creator can view how the advertisement might look if server decided to send a lower resolution asset based on its real time analysis of network condition.

Id. at 9:8-18 (emphasis added).

210. The language in Apple's patent application and published patent, along with its representations to the patent office to overcome the initial rejection, shows that Apple and the PTO believe the technology of Wapp's patents is patentable under § 101.

COUNT I

Infringement of U.S. Patent No. 8,924,192

211. Plaintiffs incorporate the paragraphs above herein by reference.

212. Defendants without authorization have been and are directly infringing at least Claim 1 of the '192 Patent.

213. Defendants Capital One and Frost infringe at least Claim 1 of the '192 Patent when their

employees or agents use Apple's Xcode or Google's Android Studio (and potentially other software development tools) to author mobile applications.

214. Defendant Apple directly infringes at least Claim 1 of the '192 Patent when it makes, uses, offers to sell and sells its Xcode Development Tools (and potentially other software development tools). Apple also directly infringes at least Claim 60 of the '192 Patent by making, using, selling, offering for sale, and/or importing infringing mobile devices (such as iPhones) that come with the Photos app installed. An iPhone with the Photos app installed infringes at least '192 Patent Claim 60 because it constitutes a "system comprising an application configured to enable a user to modify a photo on a mobile device"¹²⁷ and because the Photos app was developed using "a software authoring platform configured to simultaneously visually emulate, via one or more profile display windows, a plurality of hardware characteristics indicative of performance of the mobile device when executing the application."

215. In addition to direct infringement, at least by the filing date of the original Complaint, Defendants Capital One and Frost also indirectly infringe the '192 Patent. On information and belief, Defendants Capital One and Frost have induced third parties to author mobile applications on their behalf using Apple's Xcode or Google's Android Studio. At least by the filing date of the original Complaint, Defendants Capital One and Frost were aware of the infringement allegations regarding the '192 Patent contained herein. Defendants Capital One and Frost knowingly encourage and intend to induce infringement of the '192 Patent by instructing third parties to author applications compatible with Apple's iOS or Google's

¹²⁷ See, e.g., <https://support.apple.com/guide/iphone/edit-photos-and-videos-iphb08064d57/18.0/ios/18.0> ("After you take a photo or video, use the tools in the Photos app to edit it on your iPhone.")

Android operating systems on these Defendants' behalf, knowing and specifically intending that Apple's Xcode or Google's Android Studio will be used in an infringing manner to author the mobile applications.

216. Defendants Capital One and Frost also directly infringe at least Claim 60 of the '192 Patent by making, using, selling, offering for sale, and/or importing infringing mobile banking applications. The "Capital One Mobile" application and the "Frost" application are each a "system comprising an application configured to enable a user to modify a photo on a mobile device" and were developed using "a software authoring platform configured to simultaneously visually emulate, via one or more profile display windows, a plurality of hardware characteristics indicative of performance of the mobile device when executing the application."

217. Claim 60 of the '192 Patent provides:

A system comprising: an application configured to enable a user to modify a photo on the mobile device, wherein the application is developed using a software authoring platform configured to simultaneously visually emulate, via one or more profile display windows, a plurality of hardware characteristics indicative of performance of the mobile device when executing the application.

218. As the claim language provides, claim 60 is a "system" claim reciting structure, not a product-by-process claim reciting the steps of a process by which an end product is made.

219. Product-by-process claims require recital of an end product, and then a series of steps by which the product is made. For example, in *Abbott Labs. v. Sandoz, Inc.*, 566 F.3d 1282, 1295 (Fed. Cir. 2009) (en banc), the Federal Circuit, sitting *en banc*, held that claim 5 of the U.S. Patent No. 4,935,507 ("the '507 Patent") was a product-by-process claim.

220. Claim 5 of the '507 Patent states:

Crystalline 7-[2-(2-aminothiazol-4-yl)-2-hydroxyiminoacetamido]-3-vinyl-3-cephem-4-carboxylic acid (syn isomer) which is obtainable by dissolving 7-[2-(2-aminothiazol-4-yl)-2-hydroxyiminoacetamido]-3-vinyl-3-cephem-4-carboxylic

acid (syn isomer) in an alcohol, continuing to stir the solution slowly under warming, then cooling the solution to room temperature and allowing the solution to stand.

221. Claim 5 follows common and customary product-by-process drafting. Claim 5 requires a product, namely “Crystalline 7-[2-(2-aminothiazol-4-yl)-2-hydroxyiminoacetamido]-3-vinyl-3-cephem-4-carboxylic acid (syn isomer)”, which is made through a process outlined by a series of steps, “by dissolving 7-[2-(2-aminothiazol-4-yl)-2-hydroxyiminoacetamido]-3-vinyl-3-cephem-4-carboxylic acid (syn isomer) in an alcohol, continuing to stir the solution slowly under warming, then cooling the solution to room temperature and allowing the solution to stand.”

222. Similarly, in *Lucent Techs., Inc. v. Gateway, Inc.*, 543 F.3d 710, 716 (Fed. Cir. 2008), the Federal Circuit held that claim 10 of U.S. Patent No. 5,341,457 (“the ’457 Patent”) was a product-by-process claim.

223. Claim 10 of the ’457 Patent states:

A storage medium manufactured in accordance with a process comprising the steps of:

(a) processing an ordered time sequence of audio signals partitioned into a set of ordered blocks, each said block having a discrete frequency spectrum comprising a first set of frequency coefficients; and

(b) for each of said blocks:

(1) grouping said first set of frequency coefficients into at least one group, each group comprising at least one frequency coefficient;

(2) generating at least one tonality value, each group having an associated tonality value, said at least one tonality value reflecting the degree to which said time sequence of audio signals comprises tone-like quality;

(3) generating at least one noise masking threshold, each said at least one noise masking threshold being based upon at least one tonality value;

(4) quantizing at least one frequency coefficient in said at least one group resulting in a set of quantized frequency coefficients, said quantizing based upon said at least one noise masking threshold;

(5) applying a recording signal to said storage medium, said recording signal comprising signals representing said set of quantized frequency coefficients; and

(6) recording said recording signal onto said storage medium.

224. Claim 10 also follows common and customary product-by-process drafting. Claim 10 requires a product, namely “[a] storage medium” which is “manufactured in accordance with a process comprising the [6 steps]....”
225. In contrast to claim 5 of the ’507 Patent and claim 10 of the ’457 Patent, claim 60 of the ’192 Patent claims “[a] system” that includes at least the following two structural elements: (1) “an application” with certain features and (2) “using a software authoring platform” configured in a particularized way.
226. Claim 60 of the ’192 Patent is not a product by process claim because it is a “system” claim and does not recite any steps. Instead, the claim recites only structure, namely, an “application” structure that is developed using a “software authoring platform” structure, which is “configured to simultaneously visually emulate, via one or more profile display windows, a plurality of hardware characteristics indicative of performance of the mobile device when executing the application.”
227. Read as a whole, claim 60 covers a “system” that is infringed by specific structures with specific capabilities, not by performing steps. Claim 60 includes at least a first structural component, *i.e.*, “an application,” that is “developed using” a second structural component, *i.e.*, a “software authoring platform,” with a specific configuration. There is no series of steps recited to make the “system” or the “application.”
228. To the extent any Defendant disagrees with Plaintiffs’ reading of claim 60, the parties have a claim construction dispute that would need to be resolved by the Court at the claim construction stage.
229. In addition to direct infringement, Defendant Apple also indirectly infringes the ’192 Patent. Apple has induced third parties, including its co-Defendants, to infringe the ’192

Patent by using Xcode in an infringing manner and by making, using, selling, offering for sale, and/or importation of infringing mobile applications.

230. The claim chart attached as Exhibit H illustrates how the Xcode Development Tools, including their use, directly infringe the '192 Patent. The claim chart attached as Exhibit I illustrates how use of Android Studio directly infringes the '192 Patent.

231. Defendants will continue to infringe unless this Court enjoins Defendants and their agents, servants, employees, representatives, and all others acting in active concert with Defendants from infringing the '192 Patent.

232. At least by the filing date of the original Complaint, Defendants Capital One and Frost were aware of the infringement allegations regarding the '192 Patent contained herein.

233. At least by the filing date of the original Complaint, Defendants Capital One and Frost have knowingly engaged in the willful destruction of WAPP's business as a whole, caused the loss of goodwill related to WAPP's business, diminished the viability of WAPP's business as a whole, and these Defendants' actions have had an injurious effect on the property of WAPP, including its intellectual property and the '192 Patent.

234. Defendants Capital One's and Frost's infringement of the '192 Patent, at least since the filing of the original Complaint, is deliberate and willful. These Defendants have had knowledge of the Patents-in-Suit and their infringement at least since the filing of the original Complaint. These Defendants' continued infringement is deliberate, wanton and egregious, with reckless disregard for Plaintiffs' patent rights. This is therefore an exceptional case warranting an award of enhanced damages and attorneys' fees pursuant to 35 U.S.C. §§ 284-285.

235. On information and belief, Defendant Apple has had knowledge of the '192 Patent since at

least the date the '192 Patent issued and has known that Xcode infringes the '192 Patent since at least the date the '192 Patent issued. Apple was contacted on multiple occasions by persons representing Wapp between 2011 through 2014 regarding Wapp's patent portfolio, and based on those communications, on information and belief, Apple reviewed and continued to monitor Wapp's patent portfolio, thereby becoming aware of the '192 Patent when it issued. Apple was again made aware of the '192 Patent and was informed of Wapp's infringement allegations regarding Xcode by virtue of the multiple subpoenas served on Apple by Wapp in connection with the Wells Fargo Suit, the BoA Suit, and the Chase Suit. Accordingly, Apple knows of the '192 Patent and knows that it infringes the '192 Patent.

236. Notwithstanding Apple's knowledge of WAPP's patents through the aforementioned USPTO Patent Rejection of Apple's patent application and the other communications with Apple set forth herein, Apple recklessly forged ahead with commercialization and sales of Xcode, the annual subscription fees for Xcode, the developer revenue sharing model for mobile apps on the App Store that were developed using Xcode, and the sales of iPhones and iPads (hereafter "Apple's Mobile Product Offerings"). Apple's continued business practices—in the face of its knowledge of WAPP's patents—to make, use, sell, and offer to sell Apple's Mobile Product Offerings constitute willful infringement of Plaintiffs' patent rights.

237. Apple has knowingly engaged in the willful destruction of WAPP's business as a whole, caused the loss of goodwill related to WAPP's business, diminished the viability of WAPP's business as a whole, and Apple's actions have had an injurious effect on the property of WAPP, including its intellectual property and the '192 Patent.

238. Apple's infringement of the '192 Patent is deliberate and willful. Apple's prior and continued infringement is deliberate, wanton and egregious, with reckless disregard for

Plaintiffs' patent rights. This is therefore an exceptional case warranting an award of enhanced damages and attorneys' fees pursuant to 35 U.S.C. §§ 284-285.

239. Plaintiffs have complied with 35 U.S.C. § 287(a) and therefore Plaintiffs are entitled to past damages for Defendants' infringement.

240. Plaintiffs have not made, offered for sale, or sold within the United States any article covered by the claims of the asserted patents. Furthermore, Plaintiffs have not imported into the United States any article covered by the claims of the asserted patents. Accordingly, Plaintiffs have never had any duty to mark products under Section 287(a).

241. If a defendant wishes to assert that Plaintiffs' damages are limited by § 287(a), that defendant would need to carry an "initial burden of production to articulate the products it believes are unmarked 'patented articles' subject to § 287." *Arctic Cat Inc. v. Bombardier Rec. Prods.*, 876 F.3d 1350, 1368 (Fed. Cir. 2017). No defendant has yet met or attempted to meet this burden. If and when a defendant identifies allegedly unmarked patented articles, Plaintiffs will respond to such allegations in due course via, e.g., Plaintiffs' discovery responses and/or expert opinions.

242. As a result of Defendants' infringement of the '192 Patent, Plaintiffs have suffered monetary damages, and seek recovery in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty with interest and costs.

COUNT II

Infringement of U.S. Patent No. 9,298,864

243. Plaintiffs incorporate the paragraphs above herein by reference.

244. Defendants without authorization have been and are directly infringing at least Claim 1 of the '864 Patent.

245. Defendants Capital One and Frost infringe at least Claim 1 of the '864 Patent when their

employees or agents use Apple's Xcode or Google's Android Studio (and potentially other software development tools) author mobile applications.

246. Defendant Apple directly infringes at least Claim 1 of the '864 Patent when it makes, uses, offers to sell and sells its Xcode Development Tools (and potentially other software development tools).

247. In addition to direct infringement, at least by the filing date of the original Complaint, Defendants Capital One and Frost also indirectly infringe the '864 Patent. On information and belief, Defendants Capital One and Frost have induced third parties to author mobile applications on their behalf using Apple's Xcode or Google's Android Studio. At least by the filing date of the original Complaint, Defendants Capital One and Frost were aware of the infringement allegations regarding the '864 Patent contained herein. Defendants Capital One and Frost knowingly encourage and intend to induce infringement of the '864 Patent by instructing third parties to author applications compatible with Apple's iOS or Google's Android operating systems on these Defendants' behalf, knowing and specifically intending that Apple's Xcode or Google's Android Studio will be used in an infringing manner to author the mobile applications.

248. In addition to direct infringement, Defendant Apple also indirectly infringes the '864 Patent. Apple has induced third parties, including its co-Defendants, to infringe the '864 Patent by using Xcode in an infringing manner.

249. The claim chart attached as Exhibit J illustrates how the Xcode Development Tools, including their use, directly infringe the '864 Patent. The claim chart attached as Exhibit K illustrates how use of Android Studio directly infringes the '864 Patent.

250. Defendants will continue to infringe unless this Court enjoins Defendants and their agents,

servants, employees, representatives, and all others acting in active concert with Defendants from infringing the '864 Patent.

251. At least by the filing date of the original Complaint, Defendants Capital One and Frost were aware of the infringement allegations regarding the '864 Patent contained herein.

252. At least by the filing date of the original Complaint, Defendants Capital One and Frost have knowingly engaged in the willful destruction of WAPP's business as a whole, caused the loss of goodwill related to WAPP's business, diminished the viability of WAPP's business as a whole, and these Defendants' actions have had an injurious effect on the property of WAPP, including its intellectual property and the '864 Patent.

253. Defendants Capital One's and Frost's infringement of the '864 Patent, at least since the filing of the original Complaint, is deliberate and willful. Defendants Capital One and Frost have had knowledge of the Patents-in-Suit and their infringement at least since the filing of the original Complaint. These Defendants' continued infringement is deliberate, wanton and egregious, with reckless disregard for Plaintiffs' patent rights. This is therefore an exceptional case warranting an award of enhanced damages and attorneys' fees pursuant to 35 U.S.C. §§ 284-285.

254. On information and belief, Defendant Apple has had knowledge of the '864 Patent since at least the date the '864 Patent issued and has known that Xcode infringes the '864 Patent since at least the date the '864 Patent issued. Apple was contacted on multiple occasions by persons representing Wapp between 2011 through 2014 regarding Wapp's patent portfolio, and based on those communications, on information and belief, Apple reviewed and continued to monitor Wapp's patent portfolio, thereby becoming aware of the '864 Patent when it issued. Apple was again made aware of the '864 Patent and was informed of Wapp's infringement

allegations regarding Xcode by virtue of the multiple subpoenas served on Apple by Wapp in connection with the Wells Fargo Suit, the BoA Suit, and the Chase Suit. Accordingly, Apple knows of the '864 Patent and knows that it infringes the '864 Patent.

255. Notwithstanding Apple's knowledge of WAPP's patents through the aforementioned USPTO Patent Rejection of Apple's patent application and the other communications with Apple set forth herein, Apple recklessly forged ahead with commercialization and sales of Xcode, the annual subscription fees for Xcode, the developer revenue sharing model for mobile apps on the App Store that were developed using Xcode, and the sales of iPhones and iPads (hereafter "Apple's Mobile Product Offerings"). Apple's continued business practices—in the face of its knowledge of WAPP's patents—to make, use, sell, and offer to sell Apple's Mobile Product Offerings constitute willful infringement of Plaintiffs' patent rights.

256. Apple has knowingly engaged in the willful destruction of WAPP's business as a whole, caused the loss of goodwill related to WAPP's business, diminished the viability of WAPP's business as a whole, and Apple's actions have had an injurious effect on the property of WAPP, including its intellectual property and the '864 Patent.

257. Apple's infringement of the '864 Patent is deliberate and willful. Apple's prior and continued infringement is deliberate, wanton and egregious, with reckless disregard for Plaintiffs' patent rights. This is therefore an exceptional case warranting an award of enhanced damages and attorneys' fees pursuant to 35 U.S.C. §§ 284-285.

258. Plaintiffs have complied with 35 U.S.C. § 287(a) and therefore Plaintiffs are entitled to past damages for Defendants' infringement.

259. Plaintiffs have not made, offered for sale, or sold within the United States any article covered by the claims of the asserted patents. Furthermore, Plaintiffs have not imported into

the United States any article covered by the claims of the asserted patents. Accordingly, Plaintiffs have never had any duty to mark products under Section 287(a).

260. If a defendant wishes to assert that Plaintiffs' damages are limited by § 287(a), that defendant would need to carry an "initial burden of production to articulate the products it believes are unmarked 'patented articles' subject to § 287." *Arctic Cat Inc. v. Bombardier Rec. Prods.*, 876 F.3d 1350, 1368 (Fed. Cir. 2017). No defendant has yet met or attempted to meet this burden. If and when a defendant identifies allegedly unmarked patented articles, Plaintiffs will respond to such allegations in due course via, e.g., Plaintiffs' discovery responses and/or expert opinions.

261. As a result of Defendants' infringement of the '864 Patent, Plaintiffs have suffered monetary damages, and seek recovery in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty with interest and costs.

COUNT III

Infringement of U.S. Patent No. 9,971,678

262. Plaintiffs incorporate the paragraphs above herein by reference.

263. Defendants without authorization have been and are directly infringing at least Claim 1 of the '678 Patent.

264. Defendants Capital One and Frost infringe at least Claim 1 of the '678 Patent when their employees or agents use Apple's Xcode or Google's Android Studio (and potentially other software development tools) to author mobile applications.

265. Defendant Apple directly infringes at least Claim 1 of the '678 Patent when it makes, uses, offers to sell and sells its Xcode Development Tools (and potentially other software development tools).

266. In addition to direct infringement, Defendants Capital One and Frost also indirectly

infringe the '678 Patent. On information and belief, at least by the filing date of the original Complaint, Defendants Capital One and Frost have induced third parties to author mobile applications on their behalf using Apple's Xcode or Google's Android Studio. At least by the filing date of the original Complaint, Defendants Capital One and Frost were aware of the infringement allegations regarding the '678 Patent contained herein. Defendants Capital One and Frost knowingly encourage and intend to induce infringement of the '678 Patent by instructing third parties to author applications compatible with Apple's iOS or Google's Android operating systems on these Defendants' behalf, knowing and specifically intending that Apple's Xcode or Google's Android Studio will be used in an infringing manner to author the mobile applications.

267. In addition to direct infringement, Defendant Apple also indirectly infringes the '678 Patent. Apple has induced third parties, including its co-Defendants, to infringe the '678 Patent by using Xcode in an infringing manner.

268. The claim chart attached as Exhibit L illustrates how the Xcode Development Tools, including their use, directly infringe the '678 Patent. The claim chart attached as Exhibit M illustrates how use of Android Studio directly infringes the '678 Patent.

269. Defendants will continue to infringe unless this Court enjoins Defendants and their agents, servants, employees, representatives, and all others acting in active concert with Defendants from infringing the '678 Patent.

270. At least by the filing date of the original Complaint, Defendants Capital One and Frost were aware of the infringement allegations regarding the '678 Patent contained herein.

271. At least by the filing date of the original Complaint, Defendants Capital One and Frost have knowingly engaged in the willful destruction of WAPP's business as a whole, caused the

loss of goodwill related to WAPP's business, diminished the viability of WAPP's business as a whole, and these Defendants' actions have had an injurious effect on the property of WAPP, including its intellectual property and the '678 Patent.

272. Defendants Capital One's and Frost's infringement of the '678 Patent, at least since the filing of the original Complaint, is deliberate and willful. Defendants have had knowledge of the Patents-in-Suit and their infringement at least since the filing of the original Complaint. These Defendants' continued infringement is deliberate, wanton and egregious, with reckless disregard for Plaintiffs' patent rights. This is therefore an exceptional case warranting an award of enhanced damages and attorneys' fees pursuant to 35 U.S.C. §§ 284-285.

273. On information and belief, Defendant Apple has had knowledge of the '678 Patent since at least the date the '678 Patent issued and has known that Xcode infringes the '678 Patent since at least the date the '678 Patent issued. Apple was contacted on multiple occasions by persons representing Wapp between 2011 through 2014 regarding Wapp's patent portfolio, and based on those communications, on information and belief, Apple reviewed and continued to monitor Wapp's patent portfolio, thereby becoming aware of the '678 Patent when it issued. Apple was again made aware of the '678 Patent and was informed of Wapp's infringement allegations regarding Xcode by virtue of the multiple subpoenas served on Apple by Wapp in connection with the Wells Fargo Suit, the BoA Suit, and the Chase Suit. Accordingly, Apple knows of the '678 Patent and knows that it infringes the '678 Patent.

274. Notwithstanding Apple's knowledge of WAPP's patents through the aforementioned USPTO Patent Rejection of Apple's patent application and the other communications with Apple set forth herein, Apple recklessly forged ahead with commercialization and sales of Xcode, the annual subscription fees for Xcode, the developer revenue sharing model for

mobile apps on the App Store that were developed using Xcode, and the sales of iPhones and iPads (hereafter “Apple’s Mobile Product Offerings”). Apple’s continued business practices—in the face of its knowledge of WAPP’s patents—to make, use, sell, and offer to sell Apple’s Mobile Product Offerings constitute willful infringement of Plaintiffs’ patent rights.

275. Apple has knowingly engaged in the willful destruction of WAPP’s business as a whole, caused the loss of goodwill related to WAPP’s business, diminished the viability of WAPP’s business as a whole, and Apple’s actions have had an injurious effect on the property of WAPP, including its intellectual property and the ’678 Patent.

276. Apple’s infringement of the ’678 Patent is deliberate and willful. Apple’s prior and continued infringement is deliberate, wanton and egregious, with reckless disregard for Plaintiffs’ patent rights. This is therefore an exceptional case warranting an award of enhanced damages and attorneys’ fees pursuant to 35 U.S.C. §§ 284-285.

277. Plaintiffs have complied with 35 U.S.C. § 287(a) and therefore Plaintiffs are entitled to past damages for Defendants’ infringement.

278. Plaintiffs have not made, offered for sale, or sold within the United States any article covered by the claims of the asserted patents. Furthermore, Plaintiffs have not imported into the United States any article covered by the claims of the asserted patents. Accordingly, Plaintiffs have never had any duty to mark products under Section 287(a).

279. If a defendant wishes to assert that Plaintiffs’ damages are limited by § 287(a), that defendant would need to carry an “initial burden of production to articulate the products it believes are unmarked ‘patented articles’ subject to § 287.” *Arctic Cat Inc. v. Bombardier Rec. Prods.*, 876 F.3d 1350, 1368 (Fed. Cir. 2017). No defendant has yet met or attempted to meet this burden. If and when a defendant identifies allegedly unmarked patented articles,

Plaintiffs will respond to such allegations in due course via, e.g., Plaintiffs' discovery responses and/or expert opinions.

280. As a result of Defendants' infringement of the '678 Patent, Plaintiffs have suffered monetary damages, and seek recovery in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty with interest and costs.

COUNT IV

Infringement of U.S. Patent No. 10,353,811

281. Plaintiffs incorporate the paragraphs above herein by reference.

282. Defendants without authorization have been and are directly infringing at least Claim 1 of the '811 Patent.

283. Defendants Capital One and Frost infringe at least Claim 1 of the '811 Patent when their employees or agents use Apple's Xcode or Google's Android Studio (and potentially other software development tools) to author mobile applications.

284. Defendant Apple directly infringes at least Claim 1 of the '811 Patent when it makes, uses, offers to sell and sells its Xcode Development Tools (and potentially other software development tools).

285. In addition to direct infringement, at least by the filing date of the original Complaint, Defendants Capital One and Frost also indirectly infringe the '811 Patent. On information and belief, Defendants Capital One and Frost have induced third parties to author mobile applications on their behalf using Apple's Xcode or Google's Android Studio. At least by the filing date of the original Complaint, Defendants Capital One and Frost were aware of the infringement allegations regarding the '811 Patent contained herein. Defendants Capital One and Frost knowingly encourage and intend to induce infringement of the '811 Patent by instructing third parties to author applications compatible with Apple's iOS or Google's

Android operating systems on these Defendants' behalf, knowing and specifically intending that Apple's Xcode or Google's Android Studio will be used in an infringing manner to author the mobile applications.

286. In addition to direct infringement, Defendant Apple also indirectly infringes the '811 Patent. Apple has induced third parties, including its co-Defendants, to infringe the '811 Patent by using Xcode in an infringing manner.

287. The claim chart attached as Exhibit N illustrates how the Xcode Development Tools, including their use, directly infringe the '811 Patent. The claim chart attached as Exhibit O illustrates how use of Android Studio directly infringes the '811 Patent.

288. Defendants will continue to infringe unless this Court enjoins Defendants and their agents, servants, employees, representatives, and all others acting in active concert with Defendants from infringing the '811 Patent.

289. At least by the filing date of the original Complaint, Defendants Capital One and Frost were aware of the infringement allegations regarding the '811 Patent contained herein.

290. At least by the filing date of the original Complaint, Defendants Capital One and Frost have knowingly engaged in the willful destruction of WAPP's business as a whole, caused the loss of goodwill related to WAPP's business, diminished the viability of WAPP's business as a whole, and these Defendants' actions have had an injurious effect on the property of WAPP, including its intellectual property and the '811 Patent.

291. Defendants Capital One's and Frost's infringement of the '811 Patent, at least since the filing of the original Complaint, is deliberate and willful. Defendants Capital One and Frost have had knowledge of the Patents-in-Suit and their infringement at least since the filing of the original Complaint. These Defendants' continued infringement is deliberate, wanton and

egregious, with reckless disregard for Plaintiffs' patent rights. This is therefore an exceptional case warranting an award of enhanced damages and attorneys' fees pursuant to 35 U.S.C. §§ 284-285.

292. On information and belief, Defendant Apple has had knowledge of the '811 Patent since at least the date the '811 Patent issued and has known that Xcode infringes the '811 Patent since at least the date the '811 Patent issued. Apple was contacted on multiple occasions by persons representing Wapp between 2011 through 2014 regarding Wapp's patent portfolio, and based on those communications, on information and belief, Apple reviewed and continued to monitor Wapp's patent portfolio, thereby becoming aware of the '811 Patent when it issued. Apple was again made aware of the '811 Patent and was informed of Wapp's infringement allegations regarding Xcode by virtue of the multiple subpoenas served on Apple by Wapp in connection with the Wells Fargo Suit, the BoA Suit, and the Chase Suit. Accordingly, Apple knows of the '811 Patent and knows that it infringes the '811 Patent.

293. Notwithstanding Apple's knowledge of WAPP's patents through the aforementioned USPTO Patent Rejection of Apple's patent application and the other communications with Apple set forth herein, Apple recklessly forged ahead with commercialization and sales of Xcode, the annual subscription fees for Xcode, the developer revenue sharing model for mobile apps on the App Store that were developed using Xcode, and the sales of iPhones and iPads (hereafter "Apple's Mobile Product Offerings"). Apple's continued business practices—in the face of its knowledge of WAPP's patents—to make, use, sell, and offer to sell Apple's Mobile Product Offerings constitute willful infringement of Plaintiffs' patent rights.

294. Apple has knowingly engaged in the willful destruction of WAPP's business as a whole, caused the loss of goodwill related to WAPP's business, diminished the viability of WAPP's

business as a whole, and Apple's actions have had an injurious effect on the property of WAPP, including its intellectual property and the '811 Patent.

295. Apple's infringement of the '811 Patent is deliberate and willful. Apple's prior and continued infringement is deliberate, wanton and egregious, with reckless disregard for Plaintiffs' patent rights. This is therefore an exceptional case warranting an award of enhanced damages and attorneys' fees pursuant to 35 U.S.C. §§ 284-285.

296. Plaintiffs have complied with 35 U.S.C. § 287(a) and therefore Plaintiffs are entitled to past damages for Defendants' infringement.

297. Plaintiffs have not made, offered for sale, or sold within the United States any article covered by the claims of the asserted patents. Furthermore, Plaintiffs have not imported into the United States any article covered by the claims of the asserted patents. Accordingly, Plaintiffs have never had any duty to mark products under Section 287(a).

298. If a defendant wishes to assert that Plaintiffs' damages are limited by § 287(a), that defendant would need to carry an "initial burden of production to articulate the products it believes are unmarked 'patented articles' subject to § 287." *Arctic Cat Inc. v. Bombardier Rec. Prods.*, 876 F.3d 1350, 1368 (Fed. Cir. 2017). No defendant has yet met or attempted to meet this burden. If and when a defendant identifies allegedly unmarked patented articles, Plaintiffs will respond to such allegations in due course via, e.g., Plaintiffs' discovery responses and/or expert opinions.

299. As a result of Defendants' infringement of the '811 Patent, Plaintiffs have suffered monetary damages, and seek recovery in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty with interest and costs.

COUNT V

Infringement of U.S. Patent No. 10,691,579

300. Plaintiffs incorporate the paragraphs above herein by reference.
301. Defendants without authorization have been and are directly infringing at least Claim 15 of the '579 Patent.
302. Defendants Capital One and Frost infringe at least Claim 15 of the '579 Patent when their employees or agents use Apple's Xcode or Google's Android Studio (and potentially other software development tools) to author mobile applications.
303. Defendant Apple directly infringes at least Claim 15 of the '579 Patent when it makes, uses, offers to sell and sells its Xcode Development Tools (and potentially other software development tools).
304. In addition to direct infringement, at least by the filing date of the original Complaint, Defendants Capital One and Frost also indirectly infringe the '579 Patent. On information and belief, Defendants Capital One and Frost have induced third parties to author mobile applications on their behalf using Apple's Xcode or Google's Android Studio. At least by the filing date of the original Complaint, Defendants Capital One and Frost were aware of the infringement allegations regarding the '579 Patent contained herein. Defendants Capital One and Frost knowingly encourage and intend to induce infringement of the '579 Patent by instructing third parties to author applications compatible with Apple's iOS or Google's Android operating systems on these Defendants' behalf, knowing and specifically intending that Apple's Xcode or Google's Android Studio will be used in an infringing manner to author the mobile applications.
305. In addition to direct infringement, Defendant Apple also indirectly infringes the '579 Patent. Apple has induced third parties, including its co-Defendants, to infringe the '579

Patent by using Xcode in an infringing manner.

306. The claim chart attached as Exhibit P illustrates how the Xcode Development Tools, including their use, directly infringe the '579 Patent claims. The claim chart attached as Exhibit Q illustrates how use of Android Studio directly infringes the '579 Patent.
307. Defendants will continue to infringe unless this Court enjoins Defendants and their agents, servants, employees, representatives, and all others acting in active concert with Defendants from infringing the '579 Patent.
308. At least by the filing date of the original Complaint, Defendants Capital One and Frost were aware of the infringement allegations regarding the '579 Patent contained herein.
309. At least by the filing date of the original Complaint, Defendants Capital One and Frost have knowingly engaged in the willful destruction of WAPP's business as a whole, caused the loss of goodwill related to WAPP's business, diminished the viability of WAPP's business as a whole, and these Defendants' actions have had an injurious effect on the property of WAPP, including its intellectual property and the '579 Patent.
310. Defendants Capital One's, and Frost's infringement of the '579 Patent, at least since the filing of the original Complaint, is deliberate and willful. Defendants have had knowledge of the Patents-in-Suit and their infringement at least since the filing of this Complaint. These Defendants' continued infringement is deliberate, wanton and egregious, with reckless disregard for Plaintiffs' patent rights. This is therefore an exceptional case warranting an award of enhanced damages and attorneys' fees pursuant to 35 U.S.C. §§ 284-285.
311. On information and belief, Defendant Apple has had knowledge of the '579 Patent since at least the date the '579 Patent issued and has known that Xcode infringes the '579 Patent since at least the date the '579 Patent issued. Apple was contacted on multiple occasions by persons

representing Wapp between 2011 through 2014 regarding Wapp's patent portfolio and based on those communications, on information and belief, Apple reviewed and continued to monitor Wapp's patent portfolio, thereby becoming aware of the '579 Patent when it issued. Apple was again made aware of the '579 Patent and was informed of Wapp's infringement allegations regarding Xcode by virtue of the multiple subpoenas served on Apple by Wapp in connection with the Wells Fargo Suit, the BoA Suit, and the Chase Suit. Accordingly, Apple knows of the '579 Patent and knows that it infringes the '579 Patent.

312. Notwithstanding Apple's knowledge of WAPP's patents through the aforementioned USPTO Patent Rejection of Apple's patent application and the other communications with Apple set forth herein, Apple recklessly forged ahead with commercialization and sales of Xcode, the annual subscription fees for Xcode, the developer revenue sharing model for mobile apps on the App Store that were developed using Xcode, and the sales of iPhones and iPads (hereafter "Apple's Mobile Product Offerings"). Apple's continued business practices—in the face of its knowledge of WAPP's patents—to make, use, sell, and offer to sell Apple's Mobile Product Offerings constitute willful infringement of Plaintiffs' patent rights.

313. Apple has knowingly engaged in the willful destruction of WAPP's business as a whole, caused the loss of goodwill related to WAPP's business, diminished the viability of WAPP's business as a whole, and Apple's actions have had an injurious effect on the property of WAPP, including its intellectual property and the '579 Patent.

314. Apple's infringement of the '579 Patent is deliberate and willful. Apple's prior and continued infringement is deliberate, wanton and egregious, with reckless disregard for Plaintiffs' patent rights. This is therefore an exceptional case warranting an award of enhanced damages and attorneys' fees pursuant to 35 U.S.C. §§ 284-285.

315. Plaintiffs have complied with 35 U.S.C. § 287(a) and therefore Plaintiffs are entitled to past damages for Defendants' infringement.

316. Plaintiffs have not made, offered for sale, or sold within the United States any article covered by the claims of the asserted patents. Furthermore, Plaintiffs have not imported into the United States any article covered by the claims of the asserted patents. Accordingly, Plaintiffs have never had any duty to mark products under Section 287(a).

317. If a defendant wishes to assert that Plaintiffs' damages are limited by § 287(a), that defendant would need to carry an "initial burden of production to articulate the products it believes are unmarked 'patented articles' subject to § 287." *Arctic Cat Inc. v. Bombardier Rec. Prods.*, 876 F.3d 1350, 1368 (Fed. Cir. 2017). No defendant has yet met or attempted to meet this burden. If and when a defendant identifies allegedly unmarked patented articles, Plaintiffs will respond to such allegations in due course via, e.g., Plaintiffs' discovery responses and/or expert opinions.

318. As a result of Defendants' infringement of the '579 Patent, Plaintiffs have suffered monetary damages, and seek recovery in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty with interest and costs.

PRAYER FOR RELIEF

WHEREFORE, WAPP prays for judgment against Defendants as follows:

319. A judgment in favor of WAPP that Defendants have infringed and are infringing, either literally and/or under the doctrine of equivalents, the Patents-in-Suit;

320. A judgment in favor of WAPP that Defendants' infringement has been and continues to be willful;

321. An Order permanently enjoining Defendants, their respective officers, agents, employees, and those acting in privity with them, from further infringement of the Patents-in-Suit;

322. An award of damages to WAPP arising out of Defendants' infringement of the Patents-in-Suit, including supplemental damages for any continuing post-verdict infringement up until entry of the final judgment, with an accounting, as needed, and enhanced damages pursuant to 35 U.S.C. § 284, together with prejudgment and post-judgment interest, in an amount according to proof;
323. An award of an ongoing royalty for Defendants' post-judgment infringement in an amount according to proof in the event that a permanent injunction preventing future acts of infringement is not granted;
324. An award of attorneys' fees pursuant to 35 U.S.C. § 285 or as otherwise permitted by law; and
325. Granting WAPP its costs and further relief as the Court may deem just and proper.

DEMAND FOR JURY TRIAL

326. Pursuant to Federal Rule of Civil Procedure 38(b), WAPP hereby demands a trial by jury on all issues triable by jury.

Dated: August 15, 2025

Respectfully submitted,

/s/ Leslie V. Payne

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**ATTORNEYS FOR PLAINTIFFS WAPP
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CERTIFICATE OF SERVICE

I hereby certify that counsel of record who are deemed to have consented to electronic service are being served this 15th day of August, 2025, with a copy of this document via the Court's CM/ECF system per Local Rule CV-5(a)(3).

/s/Leslie V. Payne
Leslie V. Payne